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THE SOCIAL SCIENCE PAMPHLETS

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ESSENTIALS IN
GEOGRAPHY—HISTORY—CIVICS

BY
HAROLD RUGG
EARLE RUGG
EMMA SCHWEPPE

OF
THE LINCOLN SCHOOL OF TEACHERS COLLEGE

THE CITY AND KEY INDUSTRIES IN MODERN NATIONS

Cities: How and Why They Grew
Transportation and City Life
Coal, a Crucial Industry
Ties Between Farm and City
Resources and Industries of America
Interdependence of Nations
Industrial and Agricultural Countries
Empires, Colonies, Ships, Resources

AN EXPERIMENTAL EDITION
Of Pamphlet No. 2 of Volume I: The Seventh Grade Series

This edition is published by the authors for cooperative experimentation in schools with which arrangements are made. It is not for general commercial distribution

THIS is one of The Social Science Pamphlets for the school grades Seven, Eight, and Nine. Although these Pamphlets are not a perfected curriculum, it is necessary that they be printed at this time in order to determine experimentally their reorganization. The content that they represent has been taught in mimeographed form in three grades of The Lincoln School of Teachers College, 1920-1922. For two years and a half the authors have also carried on curriculum investigations seeking to validate the content of this social science course. The present status of these studies justifies the printing of a trial edition. The purpose of the trial edition is to determine by measured experimentation the grade placement and teaching arrangement of the material. As a result of their cooperative use in public schools, 1922-1923, The Social Science Pamphlets will be completely revised and issued in another experimental edition for use in cooperating schools, 1923-1924.

A series of monographs will be published to accompany this curriculum which will report the research by which the materials have been selected and organized.

THE CITY AND KEY INDUSTRIES IN MODERN NATIONS is Pamphlet No. 2 of Vol. I, the 7th Grade Series, in a complete Seventh, Eighth, and Ninth Grade curriculum in geography, history, and civics. Five pamphlets will be issued for each grade. They will deal with the following aspects of American life, presenting essential contemporary matters together with needed historical background and geographic conditions and explanations:

- I. Immigration and Americanization.
- II. Conserving Our Natural Resources.
- III. Industry, Business, and Transportation.
- IV. Schools, the Press, Public Opinion.
- V. The American City and Its Problems.
- VI. The Culture of America and of Other Lands.
- VII. Problems of Government in a Representative Democracy.
- VIII. Primitive Peoples, Past and Present.
- IX. America and World Affairs.

The authors need cooperation and criticism from public schools. They will welcome inquiries and suggestions about this experimental work.

Address all inquiries to: HAROLD RUGG, The Lincoln School,
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THOSE who are engaged in the making of these materials of instruction believe that the future of representative democracy in America depends upon the intelligence of the common man. They believe that the known facts of intelligence are worthy of the hypothesis that there is in the group mind sufficient capacity to express its will effectively through industrial, social, and political machinery. This means that potential capacity must be transformed into dynamic ability. They are equally confident that, although America has practised universal education on a scale never before attempted by a large nation, our instruction has fallen far short of preparing the rank and file for the intelligent operation of democratic government.

After more than a century of democracy, there are signs of serious import that we are facing a near impasse in citizenship. The impasse, if such it is, is undoubtedly the natural outgrowth of our spectacular conquest of vast material wealth; of our reception into the country of thirty-three millions of people of diverse races, nationalities, practices, and beliefs, and of the massing of human beings in cities at a rate of which we had hitherto not dreamed. The present crisis has been brought about in large part by the mushroom growth of a fragile and highly specialized mechanism of industry, transportation, communication, and credit. With these stupendous material advances, resulting in the artificial inflation of our economic and social standards of living, there has not been a parallel aesthetic, spiritual, and cultural growth.

To relieve this impasse, we must substitute critical judgment for impulsive response as the basis for deciding our social and political issues. The thoroughgoing reconstruction of the school curriculum is a necessary first step in the process, for the reason that the public school is our most potent agency for social regeneration. Especially through the curriculum in the social sciences must we subject our youth to a daily regimen of deliberation and critical thought. Only those who have been trained through years of practise in the analysis of facts, in the making of decisions, the drawing of inferences and conclusions, will resort to intelligence instead of to predisposition as their guide for conduct.

PART I

CITIES, TRANSPORTATION, AND INDUSTRY IN
AMERICA

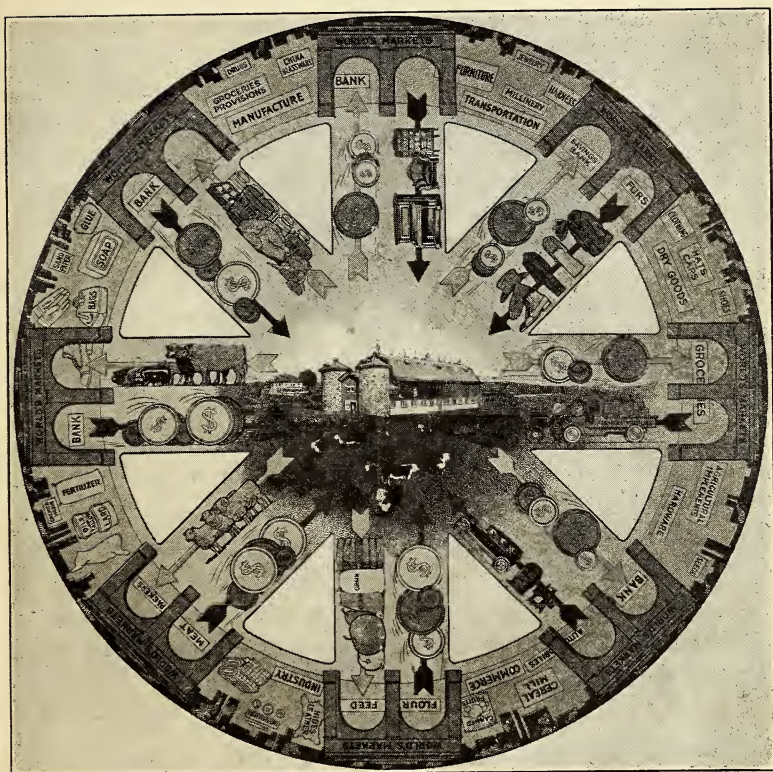
The *Social Science Pamphlets* have been organized and written with the collaboration of MARIE GULBRANSEN

A *Foreword to the Teacher* will be found in Pamphlet No. 1 of the Seventh Grade Series, "America and Her Immigrants." This explains how the pamphlets have been made, and gives suggestions for the teacher's use of them. The *Foreword* has also been reprinted as a separate folder and a copy is being sent with each set of pamphlets ordered for class use.

A *Foreword to the Pupil* will be found in Pamphlets No. 1 of the Seventh Eighth and Ninth Grade Series.

A SUGGESTED SCHEDULE OF LESSONS will be found at the end of this pamphlet. We suggest that you use it as a guide in planning your assignments.

I. COMPLICATED LIFE OF TODAY



Courtesy of Armour & Company, Chicago.
FIG. 1

What Title Would You Suggest for This Picture?

Why is the farm placed in the center?

What things appear to be coming out of the farm? Where are they going? What happens to them then?

What comes back in exchange for them? When the farmer sends sheep to the packers, what does he get in exchange? What comes to the farmer from the _____ markets? What does he give in exchange? Instead of sending out cattle and getting money in exchange, and then sending out the money again for farm wagons, or for coats and hats, why doesn't he just exchange the cattle for these things without handling

money at all? Does your reason hold good in the case of canned goods which are put up by packers? Why do farmers use money in exchanging cattle for canned goods? Have people always used money in making exchanges? Did the English traders give the Indians money for their furs, or did they make even exchanges with them of trinkets for furs? What was this method of trading called? What is the value of making exchanges with money? Do you suppose there is any place today where they trade as they did in the old barter days?

The other day in Connecticut there was a man who wanted to trade a pair of cart wheels for two pigs, and the farmer was willing to make the exchange. Why do you suppose he didn't just sell his cart wheels, then go to the farmer and buy two pigs? Would his reasons for not doing so hold in general exchange between farmer and city manufacturer? What then would you say is the chief advantage in using money?

Study the pictogram again. What does the farmer get from the world's markets with the money he receives from them in return for the farm products that he sent out?

(1) Make a list of the absolute necessities that the pictogram shows he gets.

(2) Make a list of the things that you think he might reasonably regard as "comforts of life"—things which he ought to have to make life comfortable and worth living.

(3) Are there things pictured which are "luxuries" and which he could well get along without? Name them.

What would you suggest now as a fitting title for the pictogram? Find one that will summarize the meaning of the whole picture.

ILLUSTRATIONS OF HOW THE AMERICAN PEOPLE HAVE CHANGED THEIR WAYS OF LIVING WITHIN A FEW GENERATIONS

As you read the next several sections, notice the sharp contrasts between the way people live now and the way they used to live, the conveniences they have now against the lack of them in earlier days, and the way life has been growing more and more complicated as time has gone on, and people have become more and more dependent upon each other for the needs of their daily lives.

1. From Log Cabin to Frame House and Apartment

Do you know how people lived in frontier times, before our country was settled? Did they live in apartment buildings or brick or wooden frame-houses as they do today? No, home meant a rude cabin in a clearing—a little log building, generally sixteen by twenty feet, heavy logs cut from the

forest in making the "clearing," and laid on the ground for a floor. Did they have nails and spikes for fastening? No, indeed. Logs had to be notched together, and the larger ones laid as foundations. Cellars? None at all. Floors of well-planed and polished oak? No—puncheons instead, thick, rough slabs split from great logs were laid down over round cross logs and held in place by wooden pins, for the frontiersman lacked metal.



FIG. 2.

Doors? Generally one only, also constructed of heavy slabs, and swung on wooden hinges. Of course they had no glass, so what do you think was used for window panes? Paper! Greased paper. One couldn't see through it, but it did let in light. More frequently, in earliest pioneer days, no window-panes at all were used. The danger from attack was so great that doors were made stout and oftentimes they were swung in two sections to guard against some unwelcome stranger.

Pioneer furniture was like the rest of frontier life—home made, and always wooden. The table was a smooth slab on four posts, with chairs and three-legged stools to match. Beds? Sometimes merely animals' skins and blankets laid on the floor. Crude bedsteads were made by laying slabs across sticks raised from the ground by other notched sticks. Do you think they had soft mattresses to sleep on? Far from it. For a long time, a bed tick made of plain straw was a great luxury.

When the pioneer sat down at the welcome call of "supper" after a hard day's work, did he come to a table laid with linen cloth, shining silver, and dainty china? No, he was glad to be able to find time in long winter evenings to whittle out wooden plates, spoons, cups, bowls. The cold drink was most frequently taken from a gourd. To match the serving dishes went the cooking utensils. A few iron kettles and knives were an absolute necessity. You may well imagine that the frontiersman carried them with him from place to place on his western trails and treasured them

very carefully. For iron was hard to get. One couldn't just go to the hardware store and buy a new stool, as he can now, when an old one gave out or was lost. The loss of an iron tool was a calamity on the frontier.

Does this read much like an account of the way people live on the farms or in the cities of America today? How wonderfully we have contrived to provide ourselves with comforts and even luxuries! But we live so much in the midst of them that we are apt not to pay any attention to them.

Make a list of home conveniences that were unheard of in frontier times. How many of the items were known even as late as 1880 when the frontier disappeared? Can you get stories about pioneer life from your parents or grandparents which you can tell the class?

What kinds of houses do the people of your town live in today? Any log cabins? If so, they must be few and far between. Frame houses? Brick houses? Apartment buildings or tenements? Two or three-family houses? Stucco dwellings? Stone buildings? Contrast these with the house shown in Fig. 2.

Make a list on the blackboard of the different ways the homes of the pupils in the class are heated. One class that we know about made a list of seven different ways. How many can you find? Do they make you think much of the kind of life pictured in this next story?

2. 'Borrowing Fire' in 1850

"I can remember more than once," said a Civil War veteran, reminiscing before the evening fireplace, "when my father sent me across the fields from our Indiana farm to borrow fire from a neighbor. We didn't have matches in those days, and it was mighty serious business when the fire went out. My legs were nimble, father would say, and so off I'd trudge with an iron vessel to the nearest farm house to get a little fire. It always happened on the coldest days, seem'd like. The big fireplace at the end of the cabin was the only means of heating that we had. There were no iron coal stoves when I was a boy, just a great blazing log fire which would heat one side of you red while the other side froze. That was our furnace, our cook stove, and our reading lamp. Many the night that I lay on the rough floor reading by the firelight one of the few books we had in the place. We had candles which we made ourselves, but they were precious and we didn't use them much unless we had to. Yet it was comfy and cozy, that old wood fire, and I don't wonder that people who can afford to burn woodfires have them today in addition to their furnaces. Our home was the kind of place Abe Lincoln was brought up in. I was a boy just a little later than he was, and when I read stories about him it brings back memories of my boyhood."

What kind of light do you use in your house? If you get up in the night, do you have to light a home-made candle with a stick of wood or a paper taper from the embers in the fireplace? That is the way your great grandfathers had to do. Or, do you just snap on the electric light, or touch a match to the gas jet?

Did *your* great grandfather have matches? No, he didn't in his early life. You may have heard stories at home of the excitement aroused by the first kerosene lamp that was brought into your grandparents' neighborhood. A kerosene lamp was exciting sixty or seventy years ago! But nowadays, we think houses are not at all up to date if the people who live in them have to use such things.

3. In 1865—and in 1922

Study these charts carefully. They contrast life in 1865 with life in 1922 in another way. In 1865 American families lived simply, were independent, self-sufficient, resourceful. In 1922 they live a very complicated and dependent sort of life.

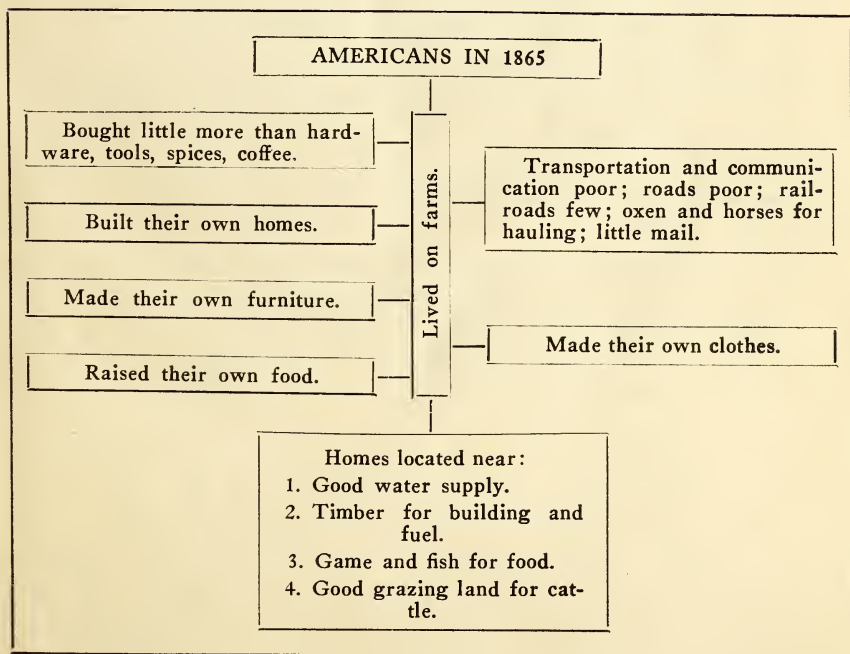


FIG. 3

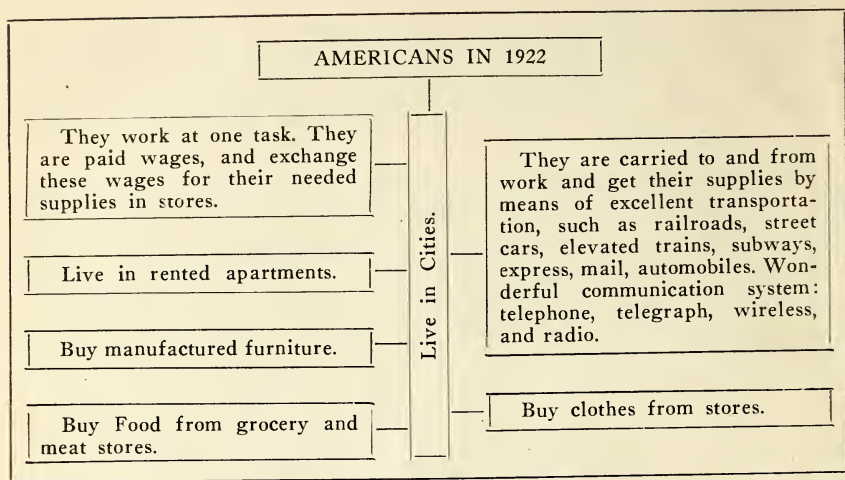


FIG. 4

Can you give other illustrations of the differences in ways of living than those brought out in these two charts?

4. "Department" Store vs. "General" Store

Make a list of the different kinds of stores there are in your home town or city. Of course you have grocery stores, meat-markets, and drug stores. What others do you have?

What is the largest store in your town? Does it sell just one kind of goods, such as groceries or meat? What different kinds of things can you buy there?

If you were on your way to a train to take a long trip and had just half an hour or so to do several errands, what kind of stores would you go to? Suppose you wanted to get some fruit and cookies for lunch, a necktie, a pair of shoes, a new purse, and a book of fiction to read on the train. Would it be necessary for you to go about the town from fruit store to clothing store, from shoe store to restaurant, from dry goods store to a leather store, and finally to a book store? If you live in a small community, perhaps you would need to take all these trips about town. But in the larger cities, places of 100,000 to 200,000 and above in population, you would go straight to a large "department" store and do all your shopping right under one roof. Clothing of all sorts you would find for men, women, and children; hardware, utensils, implements for house and farm displayed in tempting array and fine variety. "A paper of pins? A piano? Certainly, right this way. Music department over at your right," the floor-walker would tell you. "Groceries on the fifth floor; china on the sixth,"

you would hear from the elevator boy. "The latest novel for this lady, please." "Yes, there is a writing room and library on the third floor." "The post office madam? you need not go out-of-doors to the General Post Office; we have one on the main floor, right." These questions you could hear answered at almost any hour of the day.

We hear some one say, "But you can do that in the country villages." Yes, in a way you can and could even in pioneer days. The "country store"—the "general store"—that was the forerunner of the great department store of the large city. In the "general store" of the village they sell a good many kinds of things, and in the old days what you couldn't get there you went without.

But there are great differences between the "general store" of the village and the department store of the city. We can think of at least five. How many can you think of? Make a list of them in your notebook to be copied on the blackboard.

These short contrasts are just an introduction to your study of the complicated life of our modern machine world. In your study of the pamphlet you will find many more examples of it. The next section is a series of little stories written by people who lived during different stages that we have passed through from the early pioneer life on the farm and in the village to our present-day concentrated city life. Read them quickly—just to get a feeling of how life became more and more complicated and how people became more and more dependent upon each other.

Before you begin the next section, make sure that you have discussed in class all the examples you can think of illustrating how Americans have changed their ways of living in recent years. Is there anyone in the class who can tell whether English people live much as we do now, and whether they too have changed similarly in the past two or three generations? What about the French? the Germans? Russians? Chinese? Japanese? The people of India? One of our tasks this year is to learn a great deal about all these people and their ways of living as well as about our own.

II. REAL STORIES OF HOW PEOPLE'S WORK HAS GONE FROM THE HOME TO THE FACTORY

To the Teacher: It is intended that these quotations be read through at one sitting. They have been selected merely to give a feeling for the changes that have come about in the way people live and work. We suggest that you elaborate the class discussions by other examples.

"When President Nott of Union College, and his brother Samuel, the famous preacher, were boys on a stony farm in Connecticut, one of the brothers needed a new suit of clothes, and as the father was sick there was neither money nor wool in the house. The mother sheared some half-grown fleece from her sheep, and in less than a week the boy wore it as clothing. The shivering and generous sheep were protected by wrappings of braided straw. *During the Revolution*, it is said that in a day and a night a mother and her daughters in Townsend, Massachusetts, sheared a black and white sheep, carded from the fleece a gray wool, spun, wove, cut and made a suit of clothes for a boy to wear off to fight for liberty."¹

Does that sound much like the preparation of uniforms for the World War? If every mother had had to shear a sheep for her boy, what would folks who lived in the city have done?

A PICTURE OF LIFE IN THE MORE ESTABLISHED SETTLEMENTS OF 1800

Every family lived as much as possible within itself. Money was scarce, wages being about fifty cents a day, though these were generally paid in meat, vegetables, and other articles of use—seldom in money. There was not a factory of any kind in the place. [I recollect, as an after-thought, one exception. There was a hatter who supplied the town; but he generally made hats to order, and usually in exchange for the skins of foxes, rabbits, muskrats and other chance peltry. I frequently purchased my powder and shot from the proceeds of skins which I sold him.] There was a butcher, but he only went from house to house to slaughter the cattle and swine of his neighbors. There was a tanner, but he only dressed other people's skins: there was a clothier but he generally fullled and dressed other people's cloth. All this is typical of the mechanical operation of the place. Even dyeing blue a portion of the wool, so as to make linsey-woolsey for shortgowns, aprons, and blue-mixed stockings—vital necessities in those days—was a domestic operation. During

¹ Earle, Alice Morse: "Home Life in Colonial Days." The Macmillan Co., New York, 1919. Pages 202 and 203.

the autumn, a dye-tub in the chimney corner—thus placed so as to be cherished by the genial heat—was as familiar in all thrifty houses, as the Bible or the back-log. It was covered with a board, and formed a cosy seat in the wide-mouthed fireplace, especially of a chill evening. . . .

"Every autumn, it was a matter of course that we had a fat ox or a fat cow, ready for slaughter. One full barrel was salted down; the hams were cut out, slightly salted, and hung up in the chimney for a few days, and thus became "dried" or "hung beef," then as essential as the staff of life. Pork was managed in a similar way, though even on a larger scale, for two barrels were indispensable. A few pieces, as the spareribs, &c., were distributed to the neighbors, who paid in kind when they killed their swine. . . .

"Our bread was of rye, tinged with Indian meal. Wheat bread was reserved for the sacrament and company; a proof not of its superiority, but of its scarcity and consequent estimation. All the vegetables came from our garden and farm. The fuel was supplied by our own woods—sweet-scented hickory, snapping chestnut, odoriferous oak, and reeking, fizzling ash—the hot juice of the latter, by the way, being a sovereign antidote for the ear-ache. These were laid in huge piles, all alive with sap, on the tall, gaunt and-irons. . . .

"Sugar was partially supplied by our maple-trees. These were tapped in March, the sap being collected, and boiled down in the woods. This was wholly a domestic operation, and one in which all the children rejoiced, each taking his privilege of an occasional sip or dip, from the period of the limpid sap, to the granulated condiment. Nevertheless, the chief supply of sugar was from the West Indies. . . .

"There was, of course, no baker in Ridgefield; each family not only made its own bread, cakes, and pies, but their own soap, candles, butter, cheese, and the like. The fabrication of cloth, linen, and woolen was no less a domestic operation. Cotton—that is, raw cotton—was then wholly unknown among us at the North, except as a mere curiosity, produced somewhere in the tropics; but whether it grew on a plant, or an animal, was not clearly settled in the public mind.

"We raised our own flax, rotted it, hackled it, dressed it, and spun it. The little wheel, turned by the foot, had its place, and was as familiar as if it had been a member of the family. How often have I seen my mother, and my grandmother too, sit down to it—though this, as I remember, was for the purpose of spinning some finer kind of thread—the burden of the spinning being done by a neighbor of ours, Sally St. John. By the way, she was a good-hearted, cheerful old maid, who petted me beyond my deserts. . . .

"The wool was also spun in the family, partly by my sisters, and partly by Molly Gregory, daughter of our neighbor, the town carpenter. I remember her well as she sang and spun aloft in the attic. . . .

"The knitting of stockings was performed by the female part of the family in the evening, and especially at tea parties. . . .

"Mantuamakers [woman's cloak makers] and milliners came in their turn, to fit out the female members of the family. There was a similar process as to boots and shoes. We sent the hides of the cattle—sows and calves we had killed—to the tanner, and these came back in assorted leather. Occasionally, a little morocco, then wholly a foreign manufacture, was bought at the store, and made up for the ladies' best shoes. Amby Benedict, the circulating shoemaker, upon due notice, came with his bench, lapstone, and awls, and converted some little room into a shop, till the household was duly shod. He was a merry fellow, and threw in lots of singing gratis. He played all the popular airs upon his lapstone—as hurdygurdies and handorgans do now.

"Carpets were then only known in a few families, and were confined to the keeping-room and parlor. They were all home-made: the warp consisting of woolen yarn, and the woof of lists and old woolen cloth, cut into strips, and sewed together at the ends. Coverlids generally consisted of quilts, made of pieces of waste calico, elaborately sewed together in octagons, and quilted in rectangles, giving the whole a gay and rich appearance. This process of quilting generally brought together the women of the neighborhood, married and single, and a great time they had of it—what with tea, talk, and stitching."¹

These were the days when each household was practically independent of every other household. People lived far apart. If a tailor or hatter spent a week at each house fitting out the family for a year, how many houses would he be able to visit? Lawyers and preachers used to go around in much the same way as these tradesmen before people lived close enough to each other to have meeting-houses and court houses.

"Every farmer's daughter knew how to weave as well as to spin, yet it was not recognized as wholly woman's work as was spinning; for there was a trade of hand-weaving for men, to which they were apprenticed. Every town had professional weavers. They were a universally respected class, and became the ancestors of many of the wealthiest and most influential citizens today. They took in yarn and thread to weave on their looms at their own homes at so much a yard; wove their own yarn into stuffs to sell; had apprentices to their trade; and also went out working by the day at their neighbors' houses, sometimes carrying their looms many miles with them.

¹ Goodrich, S. G.: "Recollections of a Lifetime." Miller, Orton and Mulligan, New York, 1862. Vol I. pages 64-75.

"Weavers were a universally popular element of the community. The travelling weaver was, like all other itinerant tradesmen of the day, a welcome newsmonger; and the weaver who took in weaving was often a stationary gossip, and gathered inquiring groups in his loom-room; even children loved to go to his door to beg for bits of colored yarn—thrums—which they used in their play, and also tightly braided to wear as shoestrings, hair-laces, etc." ¹

For a long time, you see, each household made everything it needed—all its food, every kind of clothing, put up all its own buildings; and that was about all it had. Gradually some people found that they liked to do one kind of thing so much better than another that they made a specialty of it and learned to do it well. As a result, there grew up a class of tradesmen called "itinerants" that went from one house to another throughout the year, each plying his own trade, whether it was making shoes, hats, suits of clothes, or what-not. With some of their work done for them in this fashion, each family had more time to give to the doing of a few things. Frequently the household made more than it needed for its own use of certain articles, in which case there was some to sell to neighbors. In this way little businesses grew up within the household, for if a neighbor liked his purchase he wanted more and other neighbors wanted to buy. You can easily see how the master-worker would soon find that he could not supply all the demands. What did he do then? See if you can tell from the next paragraph.

"A great share of the light manufacture of America, is done by women in the farm-houses, especially in the New England states. For instance, straw bonnets. There are straw bonnet establishments in New York and Boston, which have their agents continually travelling among the farm-houses. This agent drives a sort of van or omnibus, and brings round bunches of straw plait, and models of bonnets of the newest fashion. These he leaves with the farmers' wives and daughters, all round the country, who work up into bonnets, according to the peculiar model, the plait so left. In due season the agent returns with some more plait, and distributes it to the straw-sewers as before, and receives up the bonnets, for the making of which he pays. All the females of an entire district, including the doctors' and ministers' wives, are engaged in this work. In another district, where boot and shoe-making is carried on upon a large scale, the upper parts of boots

¹ Earle, Alice Morse; "Home Life in Colonial Days." The Macmillan Co., New York, 1919. Pages 212-213.

and shoes are sent in bound into the farm-houses, where they are closed, bound, and otherwise prepared by female labour, and sent back in the same box by the stage coach, the wagon, or the railway. In the getting up of clothing, shirts, stocks, hosiery, suspenders, carriage trimmings, buttons, and a hundred other light things, the cheap labour of the farm-house is brought to the aid of manufactures: every district has in it some peculiar branch which is there successfully cultivated. The readiness, too, with which females enter into the factories, into the great bookbinding and tailoring establishments—contributes to make industry the leading idea of every one—for the females of a nation form the nation. . . .”

It wasn't long before the amount of business outgrew the home. When the master workman had accumulated enough to buy more machines—the machines were very expensive—he moved his work into a separate building. Of course he needed more workers in his “factory” as well as those in neighboring homes. He employed apprentices at very low wages. After an apprentice had worked a certain number of years—it was seven at first—he became a “journeyman.” Peter Cooper was an apprentice. Read what he had to say back about 1810:

“In my seventeenth year I entered as apprentice to the coachmaking business. I remained in this four years, till I was of age, and had thoroughly learned the business. During my apprenticeship I received twenty-five dollars a year for my services. To this sum I added something by working at night at coach carving, and such other work as I could get. My grandmother gave me the use of a room, in one of her rear buildings on Broadway, where I spent much of my time in nightly work. During my apprenticeship I made for my employer a machine for mortising the hubs of carriages, which proved very profitable to him, and was perhaps the first of its kind used in this country. When I was twenty-one years old, my employer offered to build me a shop and set me up in business; but, as I always had a horror of being burdened with debt, and having no capital of my own, I declined his kind offer.”

¹ Thomas Mooney: “Nine Years in America,” 1850. Quoted by Commons, John R., (editor) in “A Documentary History of American Industrial Society.” The Arthur H. Cloak Company, Cleveland, Ohio, 1910. Vol. 7, pages 72-73.

How Do These Advertisements of 1804 and 1824
Compare With the Ads. in Our Papers of Today?

Advertisement from the *Tennessee Gazette & Mero District Advertiser*
(Nashville), October 24, 1804.

"BLUE, RED, GREEN, BLACK and YELLOW DYING. I will color cotton and linnen thread, a deep blue, at four shillings and six pence per pound; and a light blue, at two shillings and six pence per pound; and the other colors mentioned I will dye upon woolen at 2 shillings per pound, and will warrant them to stand equal to any ever dyed in America, for I dye with the warm dye. I am also ready to accommodate the public with **diaper carpets, double coverlids, and summer counterpanes**; weaving at the house of Maj Buchanan, who owns a grist mill, on Mill creek, four miles from Nashville, on the road leading to Jefferson. Remember, when preparing your coverlid thread, if all cotton, to spin it **ten cuts to the pound**, double and twist it; one half must be dyed blue, and the other well bleached; and if one half is woolen, be sure to spin the cotton one cut finer to the pound than the woolen yarn, and no more—eighteen pounds will make two coverlids. . .

I will take cotton thread, or woolen yarn, in payment, if spun as above, and I will give a generous price for the same. Those who wish to purchase coverlids, will be supplied on the most reasonable terms—and those who wish to be instructed in the above branches of business, will be accommodated by application as above. ADAM MCGUIRE."

Advertisement from the Knoxville (Tenn.) *Register*, Dec. 3 1824.

"Campbell's Station, I am receiving at my store in this place and at Kingston a new supply of goods, being in much want of money will sell them as low as they are sold for the same sort of pay in Knoxville; will take in exchange for goods whiskey, when in new barrels and all of oak, country (1) linen, linsey, feathers, sewing-thread, shoe-thread, beef hides, oats, corn, lamb's wool, fur skins, Salt at both places for two dollars for fifty pounds. At Kingston by the barrel at one dollar and seventy five cents for fifty pounds. Wanted as many wagons as I can get to haul salt from King's work to this place, I will give five pounds of salt more than is given for hawling to Knoxville. Samuel Martin. May 7, 1824."¹

Lucy Larcom was one of a large family of daughters. After her father's death, her mother had to find a way to provide for the children, so she sold her small estate and moved to the then new manufacturing town of Lowell, Mass. growing up along the banks of the Merrimack. She knew of no better way to make a living than to run a boarding-house for mill girls. In her autobiography, Lucy tells how they moved, describes the new house, and tells

¹ "Old South Leaflets." Directors of the Old South Work, Boston. Vol. 6, No. 147. "Autobiography of Peter Cooper," pages 466.

about her life in the factory where she and her sister also became "mill girls" in order to help out on the family budget. Her account is a small picture of life in the factory of a hundred years ago.

"The change involved a great deal of work. 'Boarders' signified a large house, many beds, and an indefinite number of people. Such piles of sewing accumulated before us! A sewing-bee, volunteered by the neighbors, reduced the quantity a little, and our child-fingers had to take their part. But the seams of those sheets did look to me as if they were miles long! My sister Lida and I had our 'stint,'—so much to do every day. . . .

"It was hardest for me to leave the garret and the garden. In the old houses the garret was the children's castle. The rough rafters,—it was always an unfinished room, otherwise not a true garret,—the music of the rain on the roof, the worn seachests with their miscellaneous treasures, the blue-roofed cradle that had sheltered ten blue-eyed babies, the tape-ooms and reels and spinning-wheels, the herby smells, and the delightful dream corners,—these could not be taken with us to the new home. . . .

"Our house [in Lowell] was quickly filled with a large feminine family. . . . We helped a little about the housework, before and after school, making beds, trimming lamps, and washing dishes. The heaviest work was done by a strong Irish girl, my mother always attending to the cooking herself. She was, however, a better caterer than the circumstances required or permitted. She liked to make nice things for the table, and having been accustomed to an abundant supply, could never learn to economize. At a dollar and a quarter a week for board (the price allowed for mill-girls by the corporations) great care in expenditure was necessary. It was not in my mother's nature closely to calculate costs, and in this way there came to be a continually increasing leak in the family purse. . . .

"Her difficulties were increasing, and I thought it would be a pleasure to feel that I was not a trouble or burden or expense to anybody. So I went to my first day's work in the mill with a light heart. The novelty of it made it seem easy, and it really was not hard, just to change the bobbins on the spinning-frames every three quarters of an hour or so, with half a dozen other little girls who were doing the same thing. . . .

"And for a little while it was only a new amusement; I liked it better than going to school and 'making believe' I was learning when I was not. And there was a great deal of play mixed with it. We were not occupied more than half the time. The intervals were spent frolicking around among the spinning-frames, teasing and talking to the older girls, or entertaining ourselves with games and stories in a corner, or exploring, with the overseer's permission, the mysteries of the carding-room, the dressing-room, and the weaving-room. . . .

¹ Commons, John R.: "A Documentary History of American Industrial Society." The Arthur H. Cloak Company, Cleveland, Ohio, 1910. Vol. 2, pages 328, 278.

"The last window in the row behind me was filled with flourishing house-plants—fragrant-leaved geraniums, the overseer's pets. They gave that corner a bowery look; the perfume and freshness tempted me there often. Standing before that window, I could look across the room and see girls moving backwards and forwards among the spinning-frames, sometimes stooping, sometimes reaching up their arms, as their work required, with easy and not ungraceful movements. On the whole, it was far from being a disagreeable place to stay in. The girls were bright-looking and neat, and everything was kept clean and shining. The effect of the whole was rather attractive to strangers."¹

Contrast Lucy Larcom's happiness in the mill with this picture of factory life in the same town twenty-five years later. Do you think she would have been happy under these thirteen-hour day conditions?

From *The Harbinger*, Nov. 14, 1846, p. 366.²

" . . . We have lately visited the cities of Lowell and Manchester, and have had an opportunity of examining the factory system more closely than before. . . .

"In Lowell live between seven and eight thousand young women, who are generally daughters of farmers of the different States of New England; some of them are members of families that were rich the generation before. . . .

The operatives work thirteen hours a day in the summer time, and from daylight to dark in the winter. At half past four in the morning the factory bell rings, and at five the girls must be in the mills. A clerk, placed as a watch, observes those who are a few minutes behind the time, and effectual means are taken to stimulate to punctuality. . . . At seven the girls are allowed thirty minutes for breakfast, and at noon thirty minutes more for dinner, except during the first quarter of the year, when the time is extended to forty-five minutes. But within this time they must hurry to their boarding-houses and return to the factory, and that through the hot sun, or the rain and cold. A meal under such circumstances must be quite unfavorable to digestion and health, as any medical man will inform us. At seven o'clock in the evening the factory bell sounds the close of the day's work.

"Thus thirteen hours per day of close attention and monotonous labor are expected from the young women in these manufactories. . . . So fatigued—we should say, exhausted and worn out, but we wish to speak of

¹ Larcom, Lucy: "A New England Girlhood." Houghton, Mifflin & Co., Boston, 1889.

² Commons, John R. (editor): op. cit., Vol. 7, pages 132-133.

the system in the simplest language—are numbers of the girls, that they go to bed soon after their evening meal, and endeavor by a comparatively long sleep to resuscitate their weakened frames for the toils of the coming day.”

How does mill life in Lowell in 1846 compare with that of another New England district in 1922? Have you ever seen enough of factory conditions and neighborhoods to judge whether the following description is typical of factory life throughout our country? As you read it, try to decide whether it seems more modern than the preceding account you read, and if so, why?

“On the main street which winds up the hill [in Natick, Pawtucket Valley, Rhode Island] the French families live, usually four families to a tenement, all exactly alike, distinguishable only by the little black numbers over the doorways. The general appearance is one of orderliness and cleanliness in sharp contrast to steel towns or mining communities. For there is no smoke from the mill to dull the white of the houses, and the paling fences in front of them are kept in repair by the mill. Each entrance has a green storm door to keep the winter out, and set in each of these is a diamond of glass through which a curtain shows often a bit of hand-work made by the women folk within. . . .

“A woman comes through the gate and empties her pan of water into the open gutter of the main street. She is large-boned and stout and her face is sallow. More than thirty-five years ago her husband came from Belgium to work in the mills and she, his sweetheart, followed. She had come from a ‘good’ family—school teachers and not mill workers. But she could not speak English, so she, too, went to the mill. Now the husband is dead. A daughter and a son, both weavers who average \$21 each for a full week’s work, support the mother and a younger sister in school. For their five rooms they pay \$1 a week rent taken out of the pay envelopes at the mill. In the kitchen, which is the main front room, the washing machine is busy and the dinner is boiling on the wood stove. Behind is the little parlor, seldom used. Silk patchwork quilts give it color and on the chair-backs and seats are covers of hand-made lace. The drawers of the common pine dresser are opened with pride to show old world handiwork laid away. Crocheted rugs cover the oilcloth on the kitchen floor. ‘We need them,’ the daughter explains, ‘the floor is so damp.’ The dirt cellar below is, indeed, constantly damp for the hill behind is of rock and drains off to the uncemented cellars below.

“In the mother’s bedroom behind the kitchen where the carpet is up and the floor scrubbed white, the stuffing of a mattress lies on the floor

exposed to the air and sunshine from the window. It is fluffy gray. The woman runs her hands through it. 'Nice, clean. C'est le mouton. Tell the lady.' It is indeed waste from the woolen mills of Belgium, which she brought with her thirty-five years before. And each spring it is opened up, aired and sewed tightly into its washed covers again.

"The daughter is full of charm, bright, intelligent. What does she do in the evenings? There is the church, and there are the movies at Arctic. 'And we go to the city sometimes—when you want something real nice; and to the movies there when you want music with an orchestra; there's just a piano at Arctic.' . . .

"There is no sewerage system in any of the villages and the majority of the tenements are still without running water, lighting systems or any sanitary conveniences. Where there are no drains, waste water is emptied in the street or scattered over the grassless yards. Where there are drains the water is discharged into a cesspool in the rear which the company empties once a week, though there are complaints, among the Portuguese for instance, that the cesspools sometimes overflow. . . .

"The inside of the old tenements, the old ones being in the majority, are in most cases in disrepair. Plaster is falling, fresh paper is needed, roofs leak. This is especially true in the Portuguese and Italian sections. Where electric lights have been installed and drains and running water put in, rents have been raised to \$1.75 a week.

"These are the houses where the workers live. What of the mills where they spend fifty-four hours a week; the men, in some cases, fifty-six? . . .

"'It's too hot for any person to work in those mills fifty-four hours,' said a town physician who has always lived in the villages. 'It's not warm, it's *hot*. Many a time I've seen a girl come out of the mill from an atmosphere of 92, 96 or 98 degrees, her hair wet from the sprinklers, and then stand and wait in the cold outside for the car that runs only every half hour.' . . .

"A former health officer of the Valley says that the mill floors in some cases are not washed more than once a year. The law is very lenient about heating, ventilation, lighting, fire requirements and dangerous machinery.

"The Valley takes advantage of the fifty-four hours which the state allows women to work. I asked a Portuguese, out making his garden, who cooked the meals, for he had told me he had two children in school and that he and his wife both worked in the mill. 'Oh, he,' pointing to the wife who stood on the door step with the broom. 'He get up five o'clock. He get breakfast and go mill ten minute 'fore seven. He get home twenty minute 'fore six. He cook meal.'

"'And you help I suppose?'

"'Me? No! Who want do somethin' after get out that [old] jail?' " ¹

¹ The Survey, July 1, 1922. Pages 441-444.

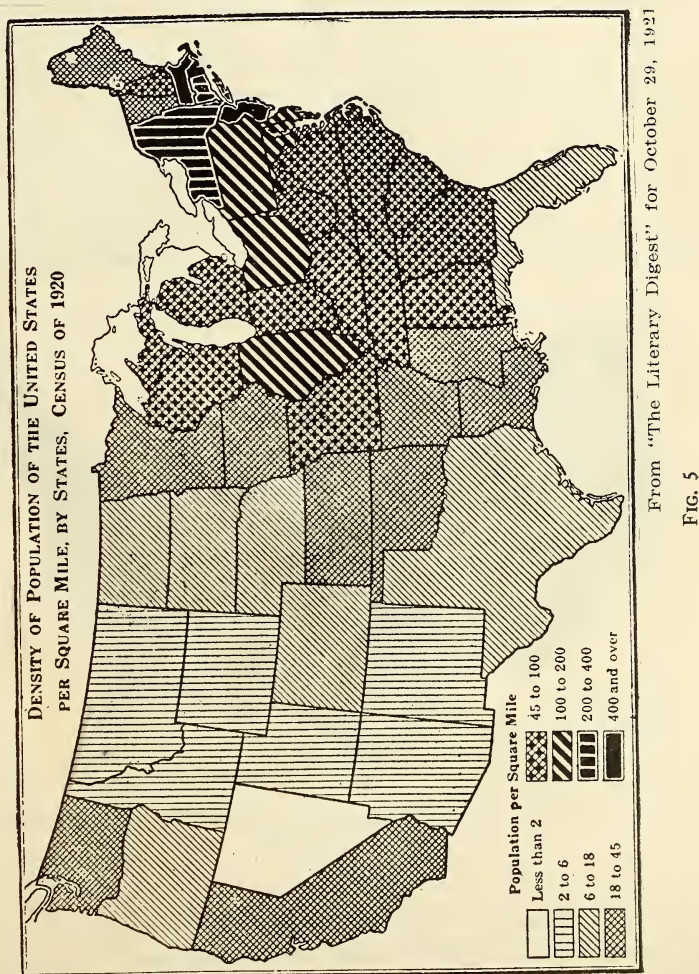
SUMMARY

Write in your notebook the main steps brought out in these readings by which industry went from the household to the factory and the mill. You should write about five sentences. In deciding what the steps are, don't expect to find a different one in each quotation. You may find in some cases that two or three quotations illustrate the same stage. The paragraphs between the quotations may give you clues.

III. THE STARTLING GROWTH OF CITIES, 1800-1922

A. WHERE ARE THE PEOPLE OF AMERICA LIVING?

Turn to Fig. 3, page 9 in Part II. What does this map tell you about where the people of the United States are living? Do they appear to be scattered equally over the whole country, or are they concentrated in particular sections?



How does Fig. 5 help you to tell where our people are living? Is there any region in the United States where more than 400 people are

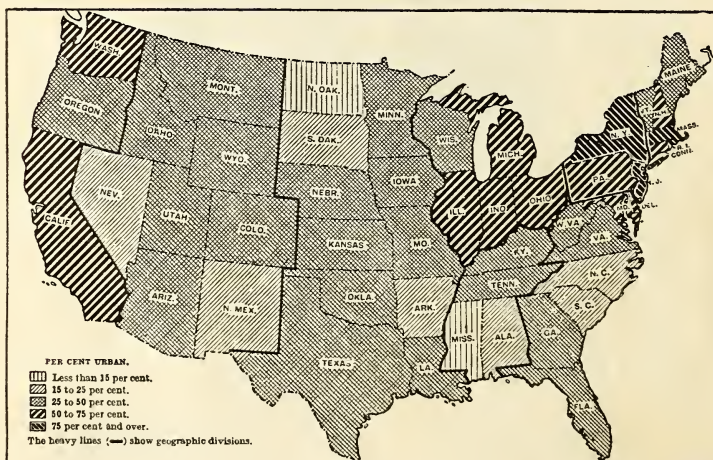
living to the square mile? What states? (There is an identification map on page 7 of Part II to help you identify the states and countries.)

Is there any region in our country where less than 2 people are living to the square mile? What states? Have you any idea how it would seem to be living where there were less than 2 people to each square mile? Just think of living in a farm house where you would have to walk on the average more than a mile, probably a mile and a half or 2 miles to find another house. There would most likely be 6 or 8 people living in the house. (The average size of a family in America is nearly 5. Why should we expect to find 6 to 8 people in the next farm house?)

On the other hand, think how crowded living must be where there are more than 400 people to the square mile as in _____ (What State?)

That must mean that many of the people are living in apartment buildings, or at least in houses that are very close together.

Do you imagine that there are countries in the world where people are living as closely together as they are in our state of Massachusetts, Mass. to the square mile? Turn forward to Part II, the population map of Fig. 3, page 9. The bar graphs under the map give you the facts you need. Are there any whole countries where the people live so crowded



This map shows the percentage of the population that is urban in the different states.¹

FIG. 6

together as in Massachusetts? As in New York State? As in Illinois, Ohio, Pennsylvania? Of the "eight leading countries" listed in the bar graph, where does the United States stand in density of population?

¹ From Report on Population, Vol. I, 1920. U. S. Census.

The United States Bureau of the Census calls any community of less than 2500 people a "rural" community; any community larger than that it calls "urban."

Fig. 6 shows the proportion of the people in each state that are living in communities of more than 2500 people.

Where is the heaviest population in our country? Where is the population lightest?

2. SINCE 1800 THE POPULATION OF ALL INDUSTRIAL COUNTRIES HAS TENDED TO CONCENTRATE IN CITIES

More than half of our own 106 million people live in towns and cities, and this tendency for people to crowd together is true of all industrial countries. But dense populations are a comparatively recent thing. Before 1800 the United Kingdom (especially England and Scotland) was the only country that had a large population of its people in cities.

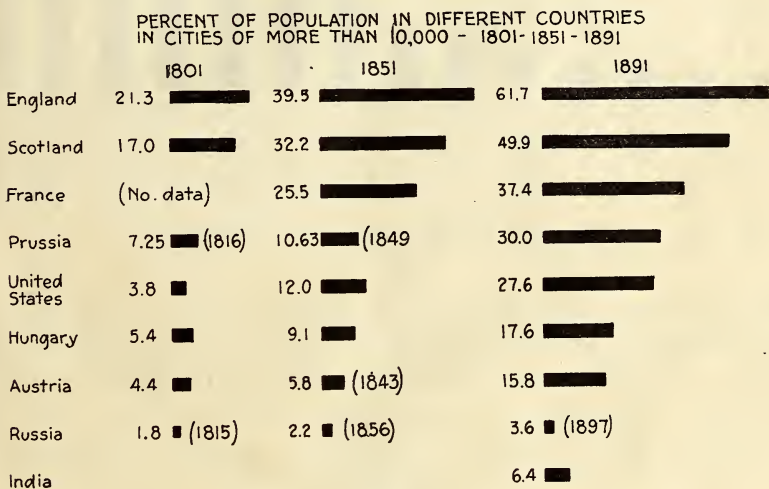


FIG. 7

See Fig. 7. In what countries were more than 20 per cent of the people living in cities of 10,000 or more in 1801? In which were less than 5 per cent in such cities?

Now notice that in practically all these countries cities of over 10,000 population grew very rapidly after 1801. Of which ones is this not true?

(In 1891, *three fifths* of the people of England were in cities of 10,000 people or more. A recent estimate reports that over *nine-tenths* of her people are in cities now!) It doesn't seem possible. Travelling north and west from London, one passes through scores of towns and cities that are practically unbroken by agricultural land. (Only six per cent of all the English people are engaged in farming!)

What does Fig. 7 tell you about the other countries? Does it show that a large percentage of their people live in cities? In which countries is the percentage largest? smallest? *England & France*

C. ALL POPULATION HAS INCREASED RAPIDLY SINCE 1800

We must not forget that *all* populations—not only city populations, but rural as well—have increased very much more rapidly since 1800 than before that time. The United States is a good illustration of this fact,

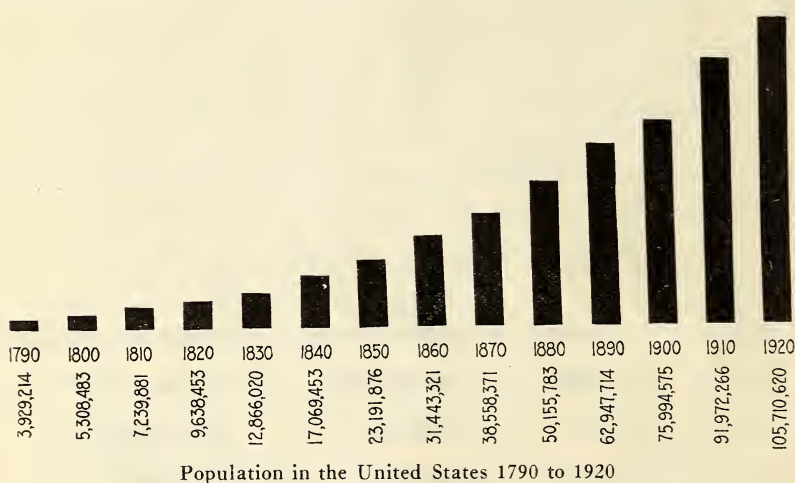


FIG 8

although it has perhaps grown more rapidly than most other countries. Fig. 8 shows the course of its growth. How many times greater is the population in 1920 than it was in 1790 when the Census Bureau of the government first counted our people? How slowly our country grew during the first sixty or seventy years after we declared our independence

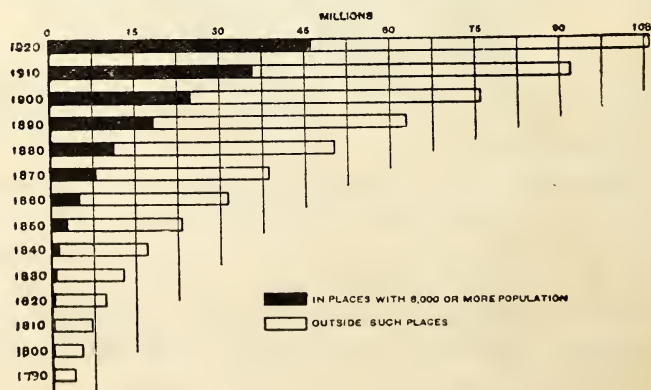


FIG. 9

from England, but how rapidly after that! From what you already know, can you tell why population grew more rapidly in America after 1840?

Now when did our people begin moving in large numbers toward the city? Was it immediately after we got our independence? No. Fig. 9 shows that the percentage of people in towns of 8000 or more in 1790, even in 1830, was very small. In those years the American people were settling the undeveloped land from the Appalachians to the Pacific.

To the Teacher: In Pamphlet No. 1 of Vol. II, *The Westward Movement and the Growth of Transportation*, you will find a map showing where the American people had settled in 1790, 1810, 1830, 1850, and 1890. Let the class see this. It shows not only the pushing of the frontier westward, but also how the increasing concentration of population followed in the wake of the frontier.

A century of hardship and strenuous labor at clearing the wilderness, settling farms, developing roads and means of transportation, was necessary before people could turn their attention much to manufacturing. Of course all through the century industry had been making rapid strides, but as late as 1891 only 27.6 per cent of our people lived in towns of 10,000 or more. In 1920, more than 40 per cent lived in towns of such size. And if we include as urban population the people who live in communities of between 2500 and 8000 people, the percentage goes up to over fifty.

HAVE CITIES AND TOWNS OF ALL SIZES GROWN RAPIDLY SINCE 1890?

Here is a way to tell which sizes of community have grown most rapidly in the last half century. Table I compares the urban and rural population of the United States by decades from 1850 to 1910.

TABLE I.
THE ESTIMATED RURAL AND URBAN POPULATION OF THE UNITED STATES¹
(Exclusive of Outlying Possessions)

Census of year	PERCENTAGE OF POPULATION			
	Cities and Villages			
	Agricul- tural	Under 8,000	8,000 to 100,000	Over 100,000
1850-----	40.6	46.9	6.5	6.0
1860-----	40.3	43.6	7.8	8.3
1870-----	40.0	39.1	10.7	10.2
1880-----	44.0	33.5	9.8	12.7
1890-----	39.2	31.8	13.6	15.4
1900-----	39.3	27.8	14.2	18.7
1910-----	34.6	26.5	16.8	22.1

¹ Data from King: *Wealth and Income of the United States*. The Macmillan Company.

Between 1850 and 1900 did the proportion of our people engaged in agriculture decrease? Between what years did the percentage of our people in cities increase most rapidly? Which size of communities was least able to hold our people?

EXERCISE

On a piece of cross-section paper make a line graph showing the following facts:

1. The per cent of our people who lived in cities of more than 100,000 population, 1850 to 1910. (Plot by decades.)
2. The per cent living in cities of 8,000 to 100,000.
3. The per cent living in cities under 8,000 population.
4. The per cent of our population that in 1910 was agricultural.

E. WHERE ARE THE CITIES OF THE UNITED STATES?

REVIEW MAP EXERCISE

Without turning to your geography, can you locate the largest cities of the country? Which are the largest cities? See if you can locate them on a physical map of the country.

Now Take a Blank Mimeographed Map of the
United States.

1. Locate on it each of the following cities: New York, San Francisco, Seattle, New Orleans, Galveston, Baltimore, Kansas City (Missouri), Boston, Philadelphia, Cleveland, Minneapolis, Denver, Omaha, Indianapolis, Detroit, Pittsburgh, Buffalo, Chicago, St. Paul, Portland (Oregon.)

2. Exchange papers with your neighbor. Correct his paper, writing the name of each city which was incorrectly located on the left margin of the map. Return the paper to its owner and receive your own.

3. Now learn the cities whose location you missed by the same method you used when you first studied them in the pamphlet on *America and Her Immigrants*.

You should now be able to locate these large cities accurately.

What general conclusion can you draw concerning the location of large cities?

What is your answer to the question: What size of community is growing most rapidly in America?

A PROBLEM FOR YOU

Can you answer the foregoing question from the data given in Table II?

TABLE II.

NUMBER AND POPULATION OF PLACES OF EACH SPECIFIED SIZE
1890-1920.¹

This table gives facts concerning sizes of communities as the Bureau of Census presents them.

CLASS OF PLACES. Number of places of specified size:	1890	1900	1910	1920
25,000 or more-----	124	160	228	287
100,000 or more-----	28	38	50	68
250,000 or more-----	11	15	19	25
500,000 or more-----	4	6	8	12
1,000,000 or more-----	3	3	3	3
Percentage of total population living in places of specified size:				
25,000 or more-----	22.2	25.9	31.0	35.7
100,000 or more-----	15.4	18.7	22.1	25.9
250,000 or more-----	11.0	14.4	16.8	19.8
500,000 or more-----	7.1	10.6	12.5	15.5
1,000,000 or more-----	5.8	8.5	9.2	9.6

F. WHY DO CITIES GROW?

I.

In this pamphlet we have not time to tell the whole story of why cities have grown so rapidly since 1800. You will learn more about it from the Eighth Grade Pamphlets. At this time, however, we need to see a few of the more important reasons. Let's try first to answer a few questions from our general knowledge.

First of all, what does your life in the city depend upon most? You must of course have food every day. Do people in the city raise the food they eat? No, they depend on the people in the country for most of it. How does the food get to the city? Do the farmers drive into town as they used to with their produce? Yes, with some of the vegetables and fruits to the small and medium-sized cities, but not with the staple foods such as meats, bread, etc. And the farmers do not reach the large cities at all. For them the staple foods must be shipped from long distances, and railroads are necessary. Have railroads grown rapidly since 1800? At what date did the first railroad run? How fast have they grown?

The time line of the Industrial Revolution, Fig. 10, and the line graph of Fig. 11 will tell you.

Figs. 12 and 13 give you the same facts in another way.

Have railroads grown fast in the period we are considering—from 1800 to the present time? Is this one reason why cities have grown?

¹ From Vol. I, Report on Population, 1920 census, U. S. Dept. of Commerce.

THE INDUSTRIAL REVOLUTION ON A TIME LINE

WHAT EFFECT DID IT HAVE ON THE WAY PEOPLE LIVE?
COMPARE IT WITH THE GROWTH OF POPULATION IN INDUSTRIAL COUNTRIES.
COMPARE IT WITH THE WAY CITIES GREW.

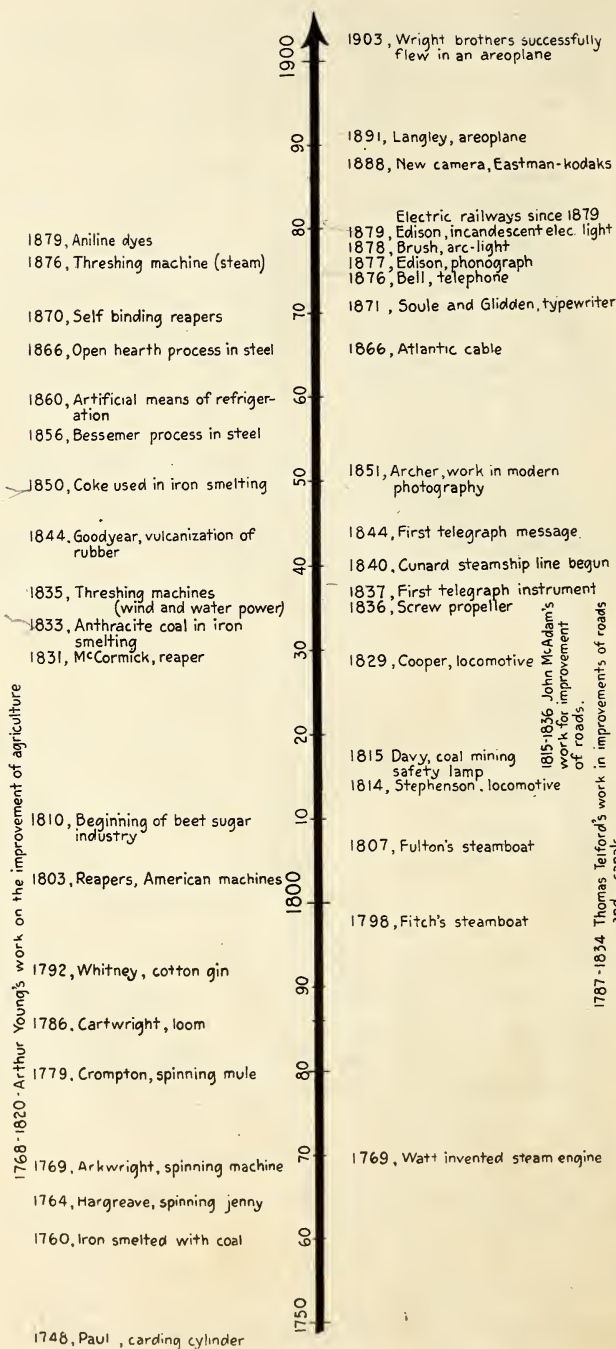


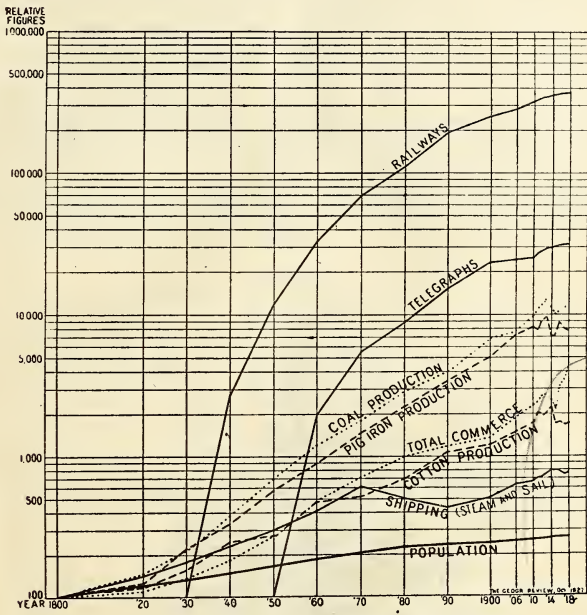
FIG. 10.

1787-1834 Thomas Telford's work in improvements of roads and canals

II.

What do people do for a living in cities if they do not raise food? Does Fig. 12 tell you another reason why cities have grown recently? Study the time line of Fig. 10. What inventions can you find there that helped to cause the great growth in manufacturing?

Now study Fig. 11 closely. What facts does it give about production that tell you more about this second great cause for the growth of cities?



From Geographical Review, Oct. 1922, page 639.

FIG. 11

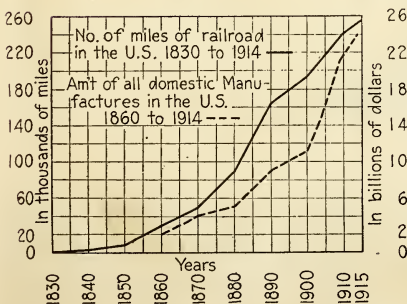


FIG. 12

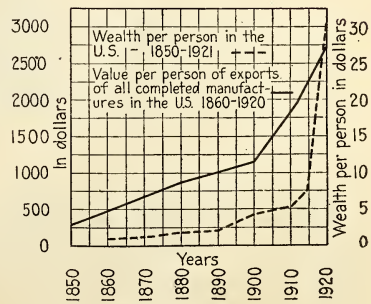


FIG. 13

Sum up now what you think this second important cause for the growth of cities was. Perhaps there were two or three important ones bound up together. See if you can discover them.

As population increases, communities not only become more thickly settled, but their territories enlarge very considerably.

The city starts with a small area, usually along a stream. As trade and manufacturing increase, and people settle more thickly, it spreads out and its confines gradually take in more territory. See from Fig. 14 what has happened to London in 100 years. About how many times as great is the territory included within the city limits now than 100 years ago? Do you notice how little suburban communities which originally were hamlets, perhaps only isolated farm houses or groups of them, have gradually been brought into the city proper as the intervening regions filled up with houses, factories, stores, banks, and consequently with people? They are all tied together by means of roads and waterways (what?). This tying together is represented on Fig. 14 by Black lines (what?).



FIG. 14

Fig. 15 shows some of the things that went hand in hand with the growth of cities. Notice how much faster city activities grew than the general population. What happened as far as the number of farm-workers was concerned? Did farm-workers increase or decrease as the number of city-workers increased?

III.

But the invention of industrial machines, the development of manufactures, the building of transportation lines, are not all the things that make possible the growth of large cities.

How could people live, work, and conduct business in cities of such tremendous area without communication facilities? It is a great deal to have subways, rapid elevated trains, excellent taxicab service, but even with these

STARTLING MULTIPLICATION OF FEATURES OF CITY AND INDUSTRIAL LIFE

Growth of population - 1 ■

Note how much more rapidly urban and industrial activities have grown than population, large as that is.

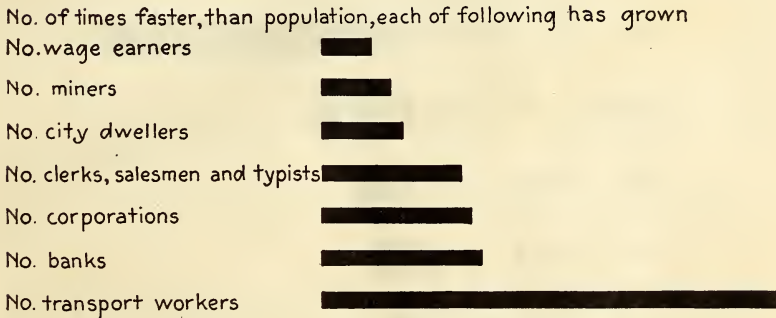


FIG. 15

business could hardly be done on the scale that it is if every transaction had to be carried on by personal interview. How much business would a Chicago merchant or banker do if he had to go to his customers ten, twenty, or thirty miles away, though they were within the same city?

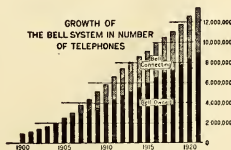


FIG. 16

Fortunately, he doesn't need to go to them, for communication has kept pace with transportation and manufacturing and trade. He needs only to take down the telephone receiver in his office, wherever it is, and in a minute or two he can have his party in direct conversation and conduct his business almost as effectively as he could if he were sitting in his client's office. Does

Fig. 16, showing how the number of telephones has speedily increased in the last twenty years, throw any light on how the factor of communication has made the growth of cities possible?

But cities began to grow long before the telephone was widespread in use. What have you to say to that comment?

What does the time line of Fig. 10 tell you about the date that the telephone was invented? About how many telephones are there in this country now? (The Bell system includes the vast majority of all telephones in the United States.) When did the wide use of telephones really begin? How does this fact correspond with what you know about the time when cities began to grow most rapidly?

IV.

Does Fig. 22 explain in part why New York, San Francisco, Boston, and other cities have grown large? Tell how.

New York	330,549	
Canadian Border	113,406	
Mexican Border	68,816	
Other Small Ports	49,192	
San Francisco	22,698	
Boston	17,007	

Number of Immigrants Who Entered the United States Through Different Ports in 1920.

FIG. 17

Make a summary in your notebook of all the reasons you can think of for the growth of cities.

G. WHY HAVE CITIES GROWN WHERE THEY DID?

MAP EXERCISE

Make a list of the thirty largest cities of the world. (You will find the population of cities given in the tables in the back of any school geography.)

Now open your geography and locate each city on your list. Those that are ports mark *P*; those that are on rivers mark *R*; those on large inland lakes mark *L*. How many of each are there?

How many of the thirty largest cities in the world are not on *waterways*? If there are any, study your map and see if you can find the reasons that they grew where they did.

From what you know now, what would you say were the most important reasons that cities have grown where they did?

I. THE PORT CITY

(A) SEATTLE

We have already found out that most of our chief cities are on important waterways. Those that are not, like Denver and Indianapolis, must be studied carefully to learn the cause of their growth.

Let us study first why certain port cities have grown. Seattle is a good example. Point to it on the wall map. In thinking of Seattle's growth we must remember that people did not settle the Oregon and Washington country in large numbers until after our Civil War was ended in 1865. True, a few pioneers went over the Oregon Trail in the 'forties at the time of the great rush to the California gold fields, but no transcontinental railroads connected even California until 1870, and the northwest coast was not connected until later. So trade of course could not develop rapidly in Seattle until after 1880.

Here is a description of Seattle. (In reading it have in mind that it was written by a Seattle enthusiast. The facts in it are correct, however.)



WITHIN the writer's experience of less than 35 years, Seattle was a struggling frontier settlement of 4,000 people, without a railroad, with one crude wharf, and no outside trade.

"Today it is the chief American port on the Pacific, a virile, progressive city of 350,000 people, and for the year 1918 was second only to New York in volume of foreign trade. That it is to become one of the dominating world cities no one familiar with conditions questions. The census figures for 1920 are 315,652. The city boundaries have not been enlarged for more than 10 years and upwards of 40,000 people reside outside of the present restricted city limits.

"Seattle is the chief city of that portion of the United States that is richest in basic resources—a territory with millions of acres of farm lands that lead the nation in yield per acre; with the only coal fields in the Pacific states; with more than one-third of all the water power in the nation; with the largest area of standing timber on the continent, and with fishing resources that make Seattle the chief fisheries port of the world. Seattle is the entrepot and market place for Alaska; which has more gold than California, more copper than Michigan and Arizona combined, more coal than Pennsylvania, undeveloped oil fields, the only tin mine in the United States, extensive marble deposits, the richest fishing areas in the world, approximately 60,000 square miles of agricultural land and a total area equal to that of Norway, Sweden, Denmark, Holland, Belgium, and Finland, in the same latitude and capable of supporting an equal population of 27,000,000.

"Seattle is several days' sailing nearer the Orient than are the California ports and is the Pacific Coast city with the shortest rail haul to the Atlantic seaboard. Natural location definitely fixes Seattle's position in the trade of the Pacific just as completely as it does her relation to Alaska.

"In consequence, Oriental commerce largely centers in the Washington customs district, which leads the nation in importation of crude rubber, vegetable oils, raw silk, tea, hemp, and all Oriental products. Commercial

developments of the future will unquestionably largely be with Siberia, China, and the countries of the Far East. Seattle's position in the trade of the Pacific is as unassailable as is her relation to Alaska."¹

Why Is Seattle Defeating Other Pacific Coast Cities in the Race for Asiatic Trade?

Study the map of Fig. 18. Take your school globe, and with a piece of string measure the distances of Pacific coast cities from ports in the Orient? Now why do you think manufacturers are tending more and more to ship goods from Seattle than from, say, San Francisco? Why are travelers to the Orient leaving from Seattle in increasing numbers?

THE "GREAT CIRCLE"



Courtesy of Seattle Chamber of
Commerce and Commercial Club,
1920 publication.

FIG. 18

The route shown on the map of Fig. 18 is called the "Great Circle" route. Do you know what a "great circle" is? On the globe that represents the earth find and trace the line called the equator. You have traced a great circle. Now trace exactly at right angles to the equator another great circle. What two important points on the earth did your pencil move through in tracing a great circle at right angles to the equator?

Turn to a map (on Mercator's projection) in your geography which shows Seattle and Vladivostok. The shortest route between these two cities is on the line of another circle, and this happens to be the trade route that is being developed between Seattle and Asiatic ports. Do you see from the map of Fig. 18 how this works out?

Now write in your notebook a statement of what a great circle is.

If you wanted to travel by the very shortest route from any port city of America to another port in a distant part of the world, what route would you try to follow? Why?

¹ From a publication of the Seattle Chamber of Commerce and Commercial Club, 1920.

Now write a summary in your notebook of the reasons why Seattle is becoming a great city.

(B) OTHER GREAT PORT CITIES OF THE UNITED STATES

We have learned how one city, which only a generation ago was an unknown little community, is fast becoming one of the great world ports. What are the other port cities of the United States? What is the most populated one? Locate it on the wall map.

Name three other port cities on the Atlantic Coast. How do they rank in population with other cities of our country? What do you think is an important cause of their large population?

There is a very important map to study in this connection—a map of the ocean trade of the world. Turn to it now on page 42 of Part II.

Where is the heaviest shipping of the world? Between what other country and ours is the largest trade?

What four cities of the United States are receiving the Atlantic trade? What other cities of our country have grown rapidly because they are ports?

(C.) WHAT MAKES A PORT?

What is it that makes a port, anyway? Is it just ships entering the harbor? Why do ships go to certain places like New York, Seattle, Galveston, Baltimore, San Francisco, New Orleans, Boston, and Philadelphia? Why do not large numbers of them go to Charleston, S. C., or Norfolk, Va., or St. Augustine, Fla.?

Geographers tell us that a city on the ocean cannot become a great port unless several things are true of it. First, it must have a *good harbor*; second it must have a large "*hinterland*" to draw trade from; and third, it must be *near Europe*.

1. A PORT MUST HAVE A GOOD HARBOR

Why a good harbor? Ships must have a place where they can tie up against a wharf and stay for days at a time at anchor in quiet water. In settling new country men always go along the coast until they find bays and inlets where the land runs out and protects the water behind it. That was one reason why the English settled at Boston (it has a harbor). That is a reason that New York and Long Island and the opposite Jersey shore were settled early by the Dutch (1609). San Francisco grew up where it did largely because of the Golden Gate and the Bay. The description you read of Seattle commented on the excellence of its harbor.

Does it seem to you that geographers are right in emphasizing the importance of a protected harbor?

A good harbor means more than quiet water; it means a deep channel running close to shore so that great ships can enter even at low tide. A channel 40 feet deep at low tide accounts for New York's supremacy as a harbor. Furthermore, the range of the tide is only 4 to 5 feet which is another reason for her harbor's superiority.

Finally, the anchorage space of the New York harbor is among the largest in the world. An airplane map of the city shows its docks running more than 20 miles on both sides of the North River (Hudson River) and the East River, as well as on the Long Island side. Look in your geography for pictures of this harbor and of others.¹

2. A PORT MUST HAVE A HINTERLAND

A city does not grow up just because people settle on the shore of a quiet harbor. Cities represent people—people at work. For people to live close together there must be agriculture, manufacturing, and trade. So as we look back over a hundred years at the history of our cities we see how their growth went hand in hand with the development of manufacturing and trade.

See how well Fig. 19 illustrates this.

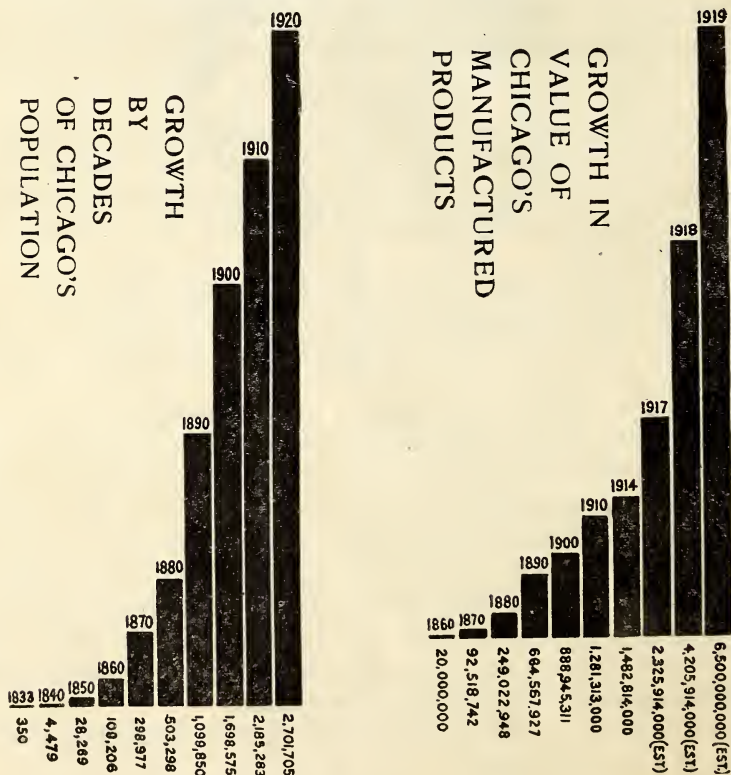


FIG. 19

It is inconceivable that Chicago's population could have reached nearly 3 million without a great growth in manufacturing and trade. But while

¹ Atwood's "Geography," Book II, Ginn & Co., has excellent airplane maps of many cities, and the requisites of ports are made clear.

some people manufacture, others farm, so to be complete the hinterland—the “land behind” the port—must be agricultural land. Did the account of Seattle’s growth mention its being in or near a great farming region?

What about the hinterland of Chicago, our second greatest city? Turn to your geography and read the discussion of the section dealing with the middle western states. Perhaps you will find it under Central Plains, or “Great Plains.” Turn through the pictures too. Do the stories of farms, ranches, tractors, wheat fields, dairies, corn fields, coal mines, help you to understand why Chicago grew and how it was possible for a great city to grow up at the South end of Lake Michigan? Wheat and flour, corn, canned goods, coal, swine, cattle, mules, oats, barley, fruit—these are the words you will find written over the middle western states on economic maps. Find one in your geography. Turn to page 5 of Part II of this pamphlet for other examples.

Now Chicago’s hinterland is as far as her buyers can reach to bring in goods to be handled, manufactured, consumed, or shipped to other places.

MAP EXERCISE

Take a blank map of the United States and sketch on it what you think is Chicago’s hinterland. What do railroad lines have to do with it? What do lake boats and river steamers have to do with it? Do you imagine that the hinterlands of American cities have enlarged any as our railroad web has grown thicker?

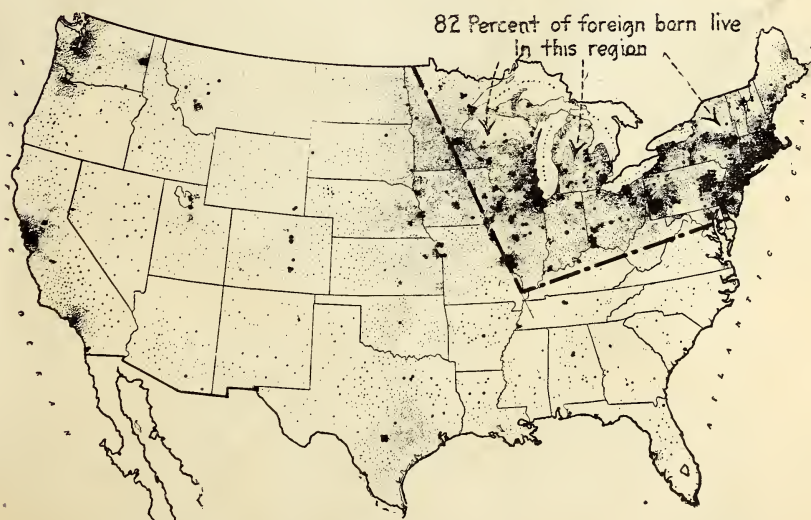


FIG. 20

Turn forward to the railroad map of page 69, Part II. Do you notice any relationship between the lines of the railroads and the location of our cities? What have railroads, hinterland, and the growth of cities to do with each other then?

NEW YORK'S HINTERLAND

New York is probably the greatest trading city in the world. We have seen that one reason is its remarkable harbor. Another is that it is the natural outlet to Europe for the manufactured products of the great industrial zone. The map of Fig. 20 shows this industrial zone. (Because so many, 82 per cent, of our immigrants live there, it is also called the "immigration zone.")

In this industrial zone are America's great coal fields and iron mines. About 90 per cent of the coal and iron produced in the United States comes from this region. In the states of Illinois, Indiana, and Ohio, are also thousands of acres of our best agricultural lands. Compare the region with the concentration of population as shown on Figs. 5 and 6.

Now study the relief map of Fig 21 and decide where transportation routes from the Middle West and this industrial zone could best break through.

Does this suggest a reason why all port cities need not be near to Europe in order to be large?

We cannot take the space here to tell the story of how New York, Boston, Baltimore, and Philadelphia raced for more than half a century for the trade of the west beyond the Appalachian Mountains. That story is told fully in *The Westward Movement and the Growth of Transportation*.¹ Here we must leave it to you to decide how it happened that New York beat the other cities and secured the lion's share of the trade. Use the relief map of Fig. 20 and the railroad and economic maps that are in your geography. Have in mind such points as these:

(1) The importance of valleys and easy routes of transportation; (2) the possibility of digging canals; (3) the railroads actually built; (4) distances from the west; (5) regions from which railroad trunk lines take products.

3. NEAREST TO WHAT CONTINENT ARE THE PORTS THAT HAVE GROWN MOST RAPIDLY?

Turn ahead to the map of the ocean trade of the world, page 42 of Part II. Do you agree with geographers who insist that those ports situated nearest to Europe were sure to grow most rapidly? Why?
(what continent)

¹ Pamphlet No. 1 of the Eighth Grade Series of "The Social Science Pamphlets," sections XIII, XVIII, and XIX.

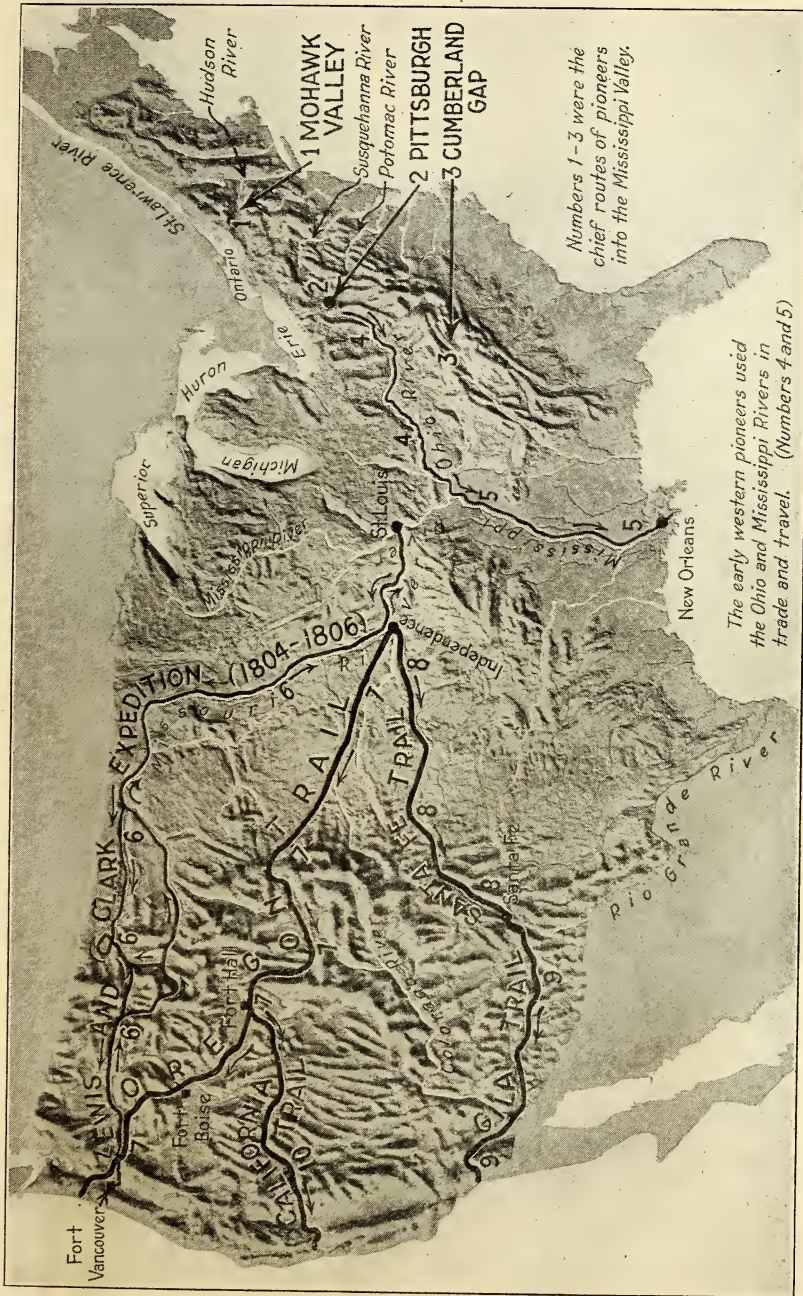


FIG. 21.

EXERCISES FOR PUPILS ON OTHER CITIES

To the Teacher: With these illustrations in hand, we suggest that you assign to individual pupils the task of making a graph showing the increase in population of particular cities since their beginning, or since 1790 for some, and of reporting to the class the causes for the growth of these cities. Statistics of populations for particular cities are to be found in Vol. I, *Population*, of the 1920 Census Report, Bureau of Census, Washington, D. C.

Assign cities which represent different types of growth, e. g., port cities showing a slow, steady growth; perhaps a rubber city like Akron, Ohio; an automobile city like Detroit; an inland city like Denver; a boom (oil) city like Tulsa, Okla. cities that have "petered out"; etc. Bring out the causes that account for the growth and decline of cities.

Your teacher will assign you cities on which to collect data and make graphs. Follow the directions she gives you.

Now prepare a summary for your notebook, in which you bring together the chief points that you have learned about cities.

IV. TRANSPORTATION—CRUCIAL TO CITY AND COUNTRY.

1. WHAT HAPPENS TO CITIES WHEN RAILROADS BREAK DOWN?

In Part II there is a vivid account of what happened to Russia's cities in 1918 to 1920, written by the famous English writer, Mr. H. G. Wells. It is a story, by an eye witness, which shows that great cities can, in the space of but three or four years, dwindle in size and go quite to pieces.

Turn next to page 66 of Part II and read the account as far as page 71.

So this is what happens to cities when the normal course of affairs in peace times is upset. Do you have any fear for the cities of America? Is it thinkable that what happened to the people of Petersburg in 1913 to 1921 could happen to the people of Chicago or San Francisco or New York?

Does this picture bring home to you the intricacy of the machine upon which life depends if you live in the city?. Does it lead your mind to a picture of scores of railroad trains running through the night between small communities and cities carrying millions of gallons of milk to be used next day by the babies and the grown ups of thousands of communities scattered over America? Do you see fresh vegetables dumped into the great central markets of our cities and distributed in the early morning hours over the different parts of the community by wholesalers and by the little corner grocery which serves you? Do you see tens of thousands of refrigerator cars drawing cold-storage meat (which had been grown in the far west and slaughtered in Kansas City or Chicago) into the wholesale markets of Boston, Baltimore, New Orleans, San Francisco, and Seattle? Do you see hundreds of thousands of freight cars heaped high with bituminous coal from Illinois, Indiana, and West Virginia, or anthracite from Pennsylvania dumped in the yards of thousands of great power plants, railroad terminals, or local coal dealers, ready to run the hundreds of thousands of factories, locomotives, and to heat several million homes of the United States? Do you see train despatchers, telegraph operators, division superintendents, workmen, guarding carefully the road bed of the railroad, officials in their offices deciding cautiously important matters upon which hinges the security of handling your food and coal, and upon which, in turn, hinges the very safety of your life?

What an incredibly complicated scheme we have built up in an industrial country like America to carry on the work of our great cities! And how completely it all depends upon transportation!

Would what happened to Vienna and Petersburg happen to our cities if our railroads stopped running? If our coal supply was shut off? If food could not get to the city?

Discuss in your class what *would* take place in an American city if such things happened.

2. WHERE DOES THE FOOD ON YOUR DINNER TABLE COME FROM?

To the Teacher: In preparing for this exercise, we suggest that you have pupils obtain copies of railway folders from several of the different railroad systems of the country: New York Central; Pennsylvania; New York, New Haven and Hartford; Chesapeake and Ohio; Northern Pacific; Union Pacific; Southern Pacific; Grand Trunk; Canadian Pacific; Oregon Short Line; and others. Each of these will give a map of a particular system and will be very helpful in showing pupils the scope of our railway systems and how dependent on them we are.

To secure a clearer idea of the very complicated scheme our lives depend upon, work out the following exercise in class.

Tell the teacher, so she can write a list on the blackboard, the foods you had on your dinner table yesterday. Did you have meat? What kind? Where do you think it came from? Open your pamphlet to the map of the American railways, Part II, page 69; also open your geography to a map showing railways, states, cities, and towns in the United States. Trace the probable route by which your meat came, and be able to show the route to the class on the wall map.

Does Fig. 22 help you?

In the same way trace the route of the vegetables you had for dinner. Turn forward to Part II, page 5, and use Fig. 1 to help answer the next question.

Did you have potatoes? Is this region you live in a good potato region? Perhaps farmers right near your town raise them and bring them into the local grocers. Can anyone tell the class? There's a "potato map" on page 13 of Part II. Does the United States produce many potatoes, as compared to other countries?

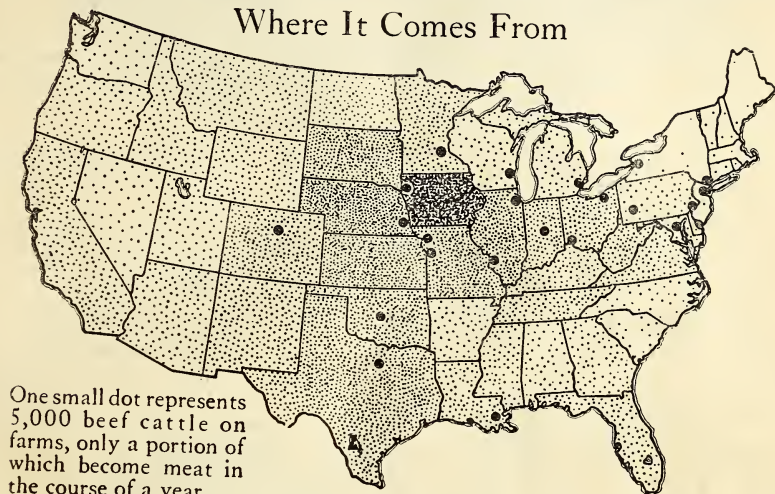
Bread? Of course. Hardly a dinner table in America is without bread. That is the world's great staple food. Was it "white" bread you had, made from wheat flour? Where did the wheat probably come from? (See page 5 Part II.) Trace the route on the wall map.

Did you have any vegetables? Is it the right season for fresh vegetables? Do farmers near your home do "truck" gardening, raising tomatoes, sweet corn, peas, beans, and other vegetables? If so, how do they get them to the markets of your city? By horse-drawn wagon? Are the roads good outside the city? Do the farmers use motor-trucks? Have the roads been macadamized in recent years? Do you see how this has anything to do with marketing food stuffs and manufactured goods?

What about fruit? Grape fruit? Oranges? Bananas? Apples? Find out where they probably come from, and trace what seems to you to be the best route.

Perhaps you will find, as some pupils did in New York State last year, that the apples they were eating came all the way from Oregon, when apples could have been obtained—very good ones, too—right within their own state! We will study later how such a queer thing could have happened.

Where It Comes From



Where It Goes

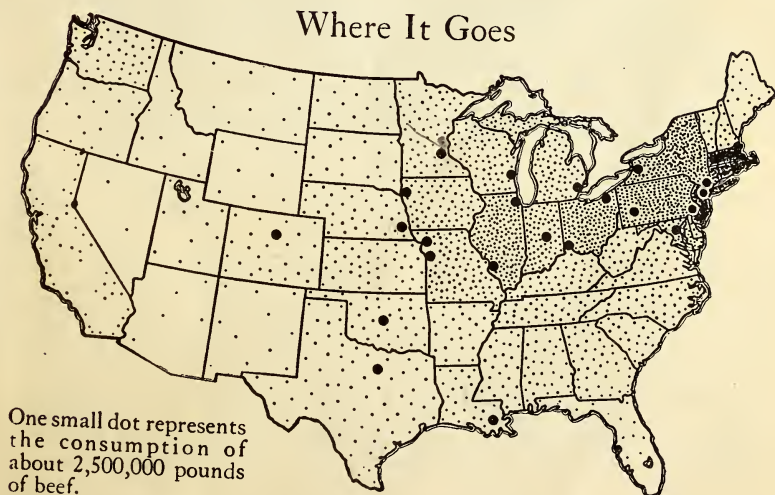


FIG. 22.

Just now we are interested to learn that things on our dinner table may come from very far away. Yet we depend on their being on hand in the city each day. We take for granted they are at the store when we go to buy them or order them over the telephone.

Was coffee served on your dinner or breakfast table yesterday? Where do you think it came from? Figs. 10 and 11 on page 17 of Part II will tell you. Do we raise any coffee? Where does it come from? Trace on the wall map the way you think it might have been shipped to us.

Do this for any other food you had for yesterday's dinner.

What part of the food in your dinner was raised right in your local community? What part just outside in nearby towns? What came by train from hundreds or even thousands of miles away?

Do you see how dependent we in the towns and cities are, on our great transportation system?

3. NOTE TO REMIND YOU THAT THE USE OF COAL AND THE LOCATION OF OUR INDUSTRIES DEPENDS ON TRANSPORTATION ALSO

You have now seen how the food that we eat in our towns and cities depends upon transportation. Of course other things that are very important in our lives depend on transportation too. Coal to heat our homes, to supply motive-power for our locomotives and power plants in thousands of factories. This, to be useful, must be transported from the mine to the points all over the country. Iron ore must be taken from Minnesota and Wisconsin mines to Illinois, Indiana, and Pennsylvania steel mills. Lumber must be brought from our forest regions to other sections where factories and mills are waiting to make it up into finished products. Manufactured products of all sorts and kinds must be moved from factory to warehouse, to store and finally to consumer. And it all depends on TRANSPORTATION.

The best place to discuss this matter is in connection with the consideration of coal and industries, so we will not take it up further at this time.

4. A PICTURE STORY OF A CENTURY OF TRANSPORTATION

In many ways our transportation system today—railroads, steamboats, canal boats, motor highways—is quite remarkable. We have grown up so much in the midst of it, however, that we fail to see how unusual it really is. If you could think back only 100 years to a time when there were no trains, no canals, no automobiles, no airplanes, no great steamboats, you would see more clearly what great changes have come in just three generations.

We have assembled some pictures that will give you a rapid sketch of these changes. Perhaps you can find at home or in books or magazines in the library, pictures which will help your class to understand how transportation grew up in our country. The whole story is told quite fully in Pamphlet No. 1 of the Eight Grade Series, *The Westward Movement and the Growth of Transportation*.

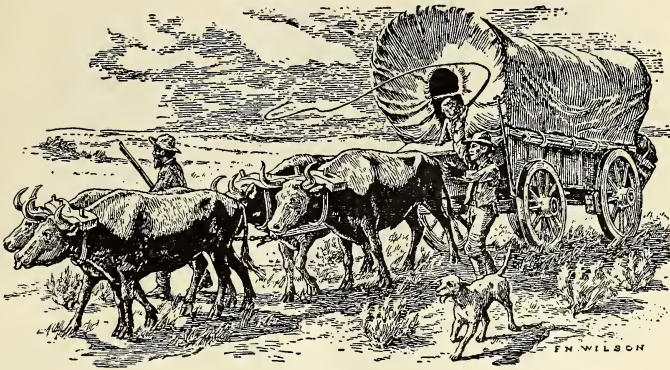
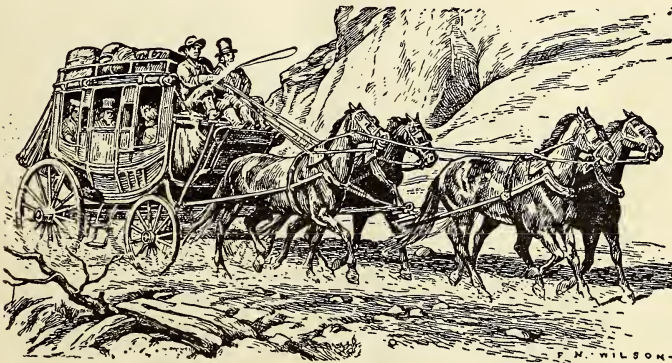
On the trail in the early days¹

FIG. 23.

No. 1. Following the Revolutionary War the "Conestoga wagon" was one of the most used land "freighters". It carried the goods of westward-moving pioneers over the Appalachians 1790 to 1820; of the restless settlers of the Ohio Valley who moved into the Mississippi Valley states in the 1820's, 1830's, 1840's and 1850's; and of the "forty-niners" who went to the California and Oregon country in the 1850's and 1860's. Not until 1870 was there a transcontinental railroad tying Atlantic and Pacific coasts together.



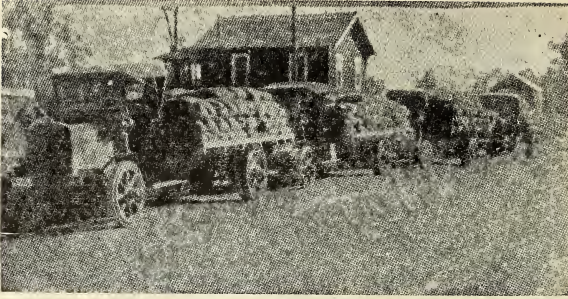
"I kept on swinging through the deserts . . . in the 'boot' of the Concord stage."²

FIG. 24

No. 2. The Conestoga wagon carried the family's freight as well as the family itself; the Concord stage came only after roads had been blazed, poor as they were. The use of these coaches followed in the wake of the Westward Movement. The Pennsylvanians used them on the Lancaster Pike about 1800; they rolled in hundreds on the National (Cumberland) Road from 1820 to 1840, through Maryland, West Virginia, and Ohio; similar vehicles were used in the Middle West a generation later. They came before the railroad, held on while it was being perfected, but went out of use as it became a cheap, rapid, and comfortable way to travel. 10 to 20 miles a day on the stage, 800 miles a day on the railroad!

¹ Reproduced with permission from "The White Indian Boy" by E. N. Wilson and Howard R. Driggs, page 1. Copyrighted by The World Book Company.

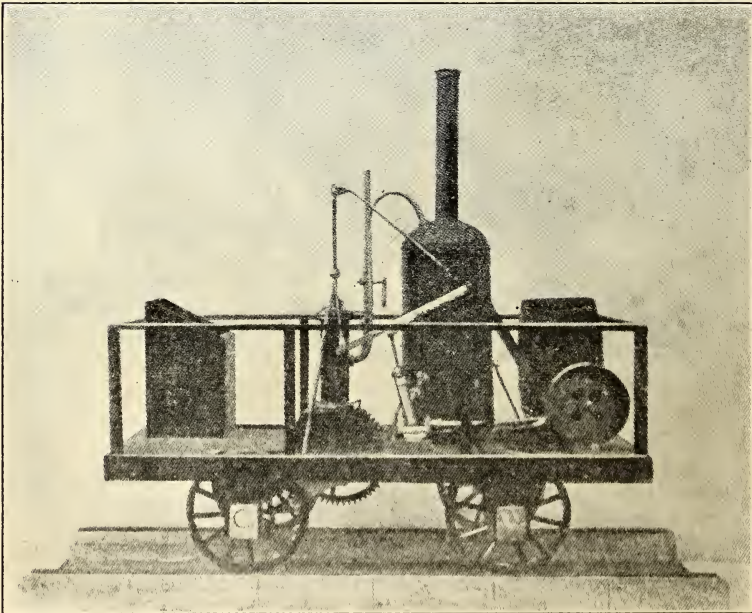
² Reprinted with permission from "The White Indian Boy," by Wilson and Driggs. Copyrighted by the World Book Company.



A line of motor trucks waiting to move up to the doors of the Sacramento River warehouses at Princeton, California

FIG. 25

No. 3. Finally soon after the passenger automobile became a reality in the early 1890's the motor trucks appeared as a cheap and rapid means of transporting freight. With them both came astonishing improvements in roads, exceeding the gains that had been made when the stage lines were laid out and the National road was built. Hundreds of millions of dollars are now being spent yearly for macadamized roads. Merchandise of all sorts and kinds are shipped by truck on hauls as long as several hundred miles. Contrast the hundred-and-fifty mile-a-day haul of 1922 with the ten-mile-a-day haul of 1890! On which do you think freight would be least damaged?

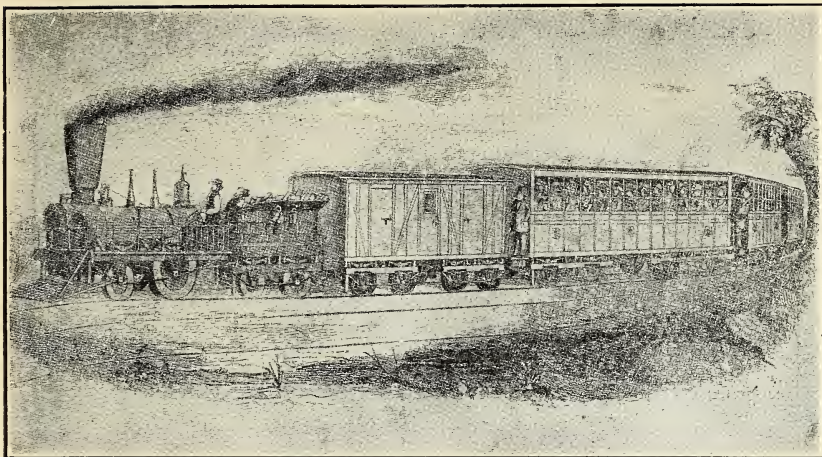


This is the "Tom Thumb," an engine built by Peter Cooper in 1829.
It actually went!

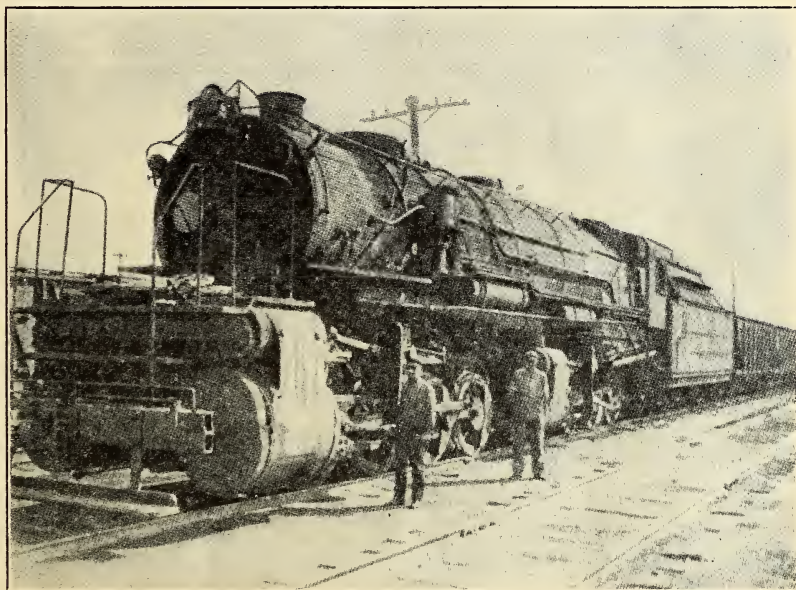
FIG. 26¹

No. 4. After people had moved things clumsily for thousands of years, men finally invented an engine that would travel on rails. The "Tom Thumb" is one of the first attempts. After succeeding in making the thing go, inventors very soon learned how to improve it. The next picture No. 5, shows how much progress was made in 10 years.

¹ From "The Americas," Feb., 1921. National City Bank, New York City.



The locomotive in this train was used about 1838-40. It has a lamp headlight but no cab for the engineer. Notice that they burned wood in those days. What curious cars they had!

FIG. 27 ¹FIG. 28 ²

No. 5. We have not space to give you pictures of the whole story, but here is one that tells how much men have learned in a century of railroad building. Compare heavy steel rails of 1921 with the stone and iron rails of 1829; the 16 to 20 wheels of today's locomotive with the four fragile ones used in 1829. How the smoke stack has dwindled in size and

¹ From Dunbar, Seymour: "A History of Travel in America," Vol. III, page 925. Bobbs-Merrill Company, Indianapolis.

² From "The Americas," Feb., 1921. National City Bank, New York City.

the boiler has enlarged! One engine (1839) hauled a few lightly-loaded cars at a snail's pace; the other (1921), a string of fifty or more, each laden with tons of freight.

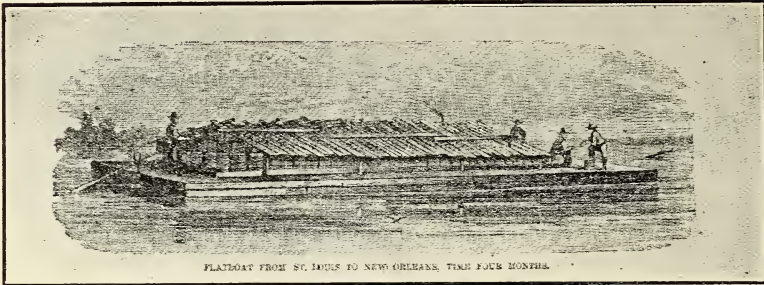
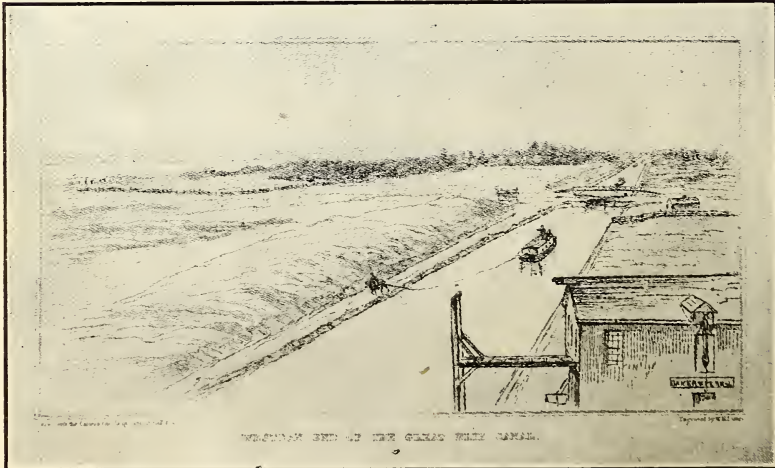


FIG. 29¹

No. 6. On water as on land man has learned better ways how to transport things. In the days when people were using the Conestoga wagon, they depended for their down-river traffic on the sturdy flatboat. Millions of pioneers floated down the Ohio and Mississippi Rivers on varieties of arks—broad-horns, barges, packets—in the years between 1800 to 1850. Curious things they were, "combinations of log-cabin, fort, floating barnyard and country grocery," housing men, women, children, horses, pigs, chickens, cows, dogs, kegs of powder, dishes, furniture, and what-not.



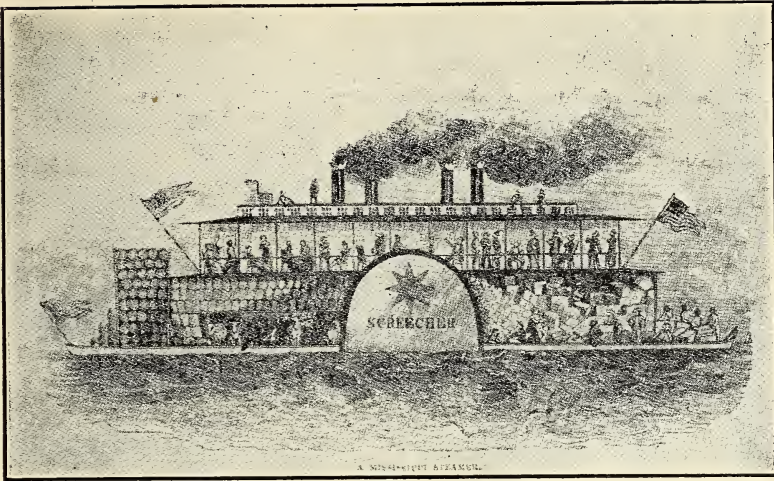
Towing a canal boat on the western level stretches of the Erie Canal.

FIG. 30²

No. 7. About the time that Conestogas were rumbling into the Ohio Valley and Stages were whizzing along the National Road, easterners were digging Canals to bring the growing trade of the west to the eastern cities of New York, Philadelphia, and Baltimore. The Erie Canal, 1825, joining the Hudson River and Lake Erie, was America's only successful canal until the Panama Canal was built. But America has spent her time making railroads and her canals have amounted to little. We are way behind Europe in this respect.

¹ Reprinted with permission of Bobbs-Merrill Co. from Dunbar, op. cit., Vol. I, page 292.

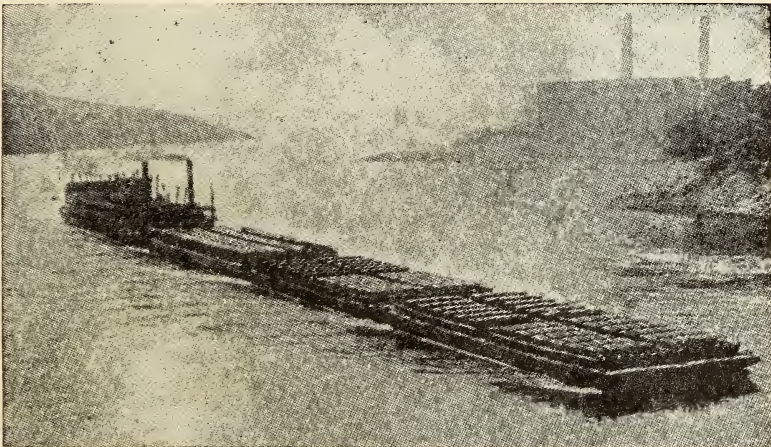
² From Dunbar, *ibid.* Vol. II.



A Mississippi steamer.:

FIG. 31¹

No. 8. Later in the 1840's and 1850's and 1860's came the river steamboat. Fitch did much to invent it and make it go way back in the 1790's in Pennsylvania; Fulton, Livingstone (1807), and Vanderbilt (1830 to 1870), made it a commercial success on the Hudson and other eastern rivers. About the time of the Civil War thousands of them plied up and down the Mississippi and Ohio Rivers carrying both freight and passengers. They were slow and dangerous things to travel in.



AUTOMOBILES SENT BY RIVER HIGHWAYS TO RELIEVE THE RAILWAY CONGESTION

Michigan manufacturers have, it is stated, sent barge-loads of automobiles, as shown in the photograph, from St. Louis to Cincinnati and other points, whence they will proceed to their destinations on their own power. The freight-car shortage is thus relieved.

FIG. 32²

No. 9. As the latest word in river freight, this shows how far we have grown from the days of the flatboat. On the Great Lakes and larger rivers of America today thousands of small but powerful tug-

¹ Reproduced with permission of Bobbs-Merrill Co. from "A History of Travel in America," by Seymour Dunbar, Vol. II, page 402.

² Courtesy of the Outlook.

boats and steamers are "towing" millions of tons of freight. This shipment of manufactured goods such as *automobiles* by river boat is exceptional. Generally only heavy raw materials, like iron ore or coal are shipped this way. The lighter things go by railroads; it is quicker but more expensive. Transportation by water has nearly always been much cheaper than by railroad.

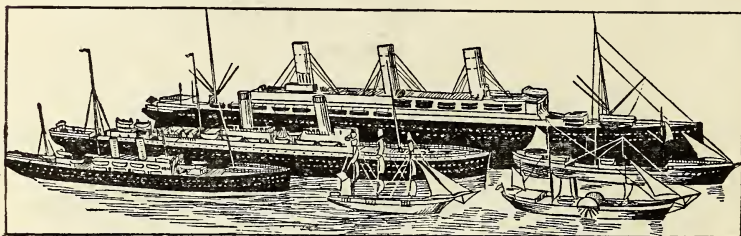


FIG. 33

No. 10. Finally in summary fashion here is 90 years of development in transatlantic shipping. From the little "clipper" sailing ship, "Dreadnaught" (we smile at the name) of 1835, we see the first successful attempt at a steam ocean travel in the sidewheel "Brittania" of 1839. Stages of improvement are shown in the iron screw ships "Borossia," 1857, and "Arizona" in 1887, the steel screw ship "Oceanic," 1900. The climax appears in the giant "Leviathan" 1914, formerly the German "Vaterland."

5. AMERICA'S RAILROAD SYSTEM: VAST, SPEEDY, LUXURIOUS

All Africa has	29,000 miles of railroad.
All Asia has	69,000 miles of railroad.
All Europe has	217,000 miles of railroad.

The United States alone has 270,000 miles of railroad.¹

Is there any doubt in your mind as to which country has carried the construction of railroads furthest? Our foreign visitors may well marvel at the bigness of our railroad system, the speed of our trains, the convenience of the service, and the comforts of travel. America's railroads in number of miles and rate of speed are greater than those of any other country in the world.

A Country of Great Territory Must Have Ties to Bind Her People Together

Railroads—Telephones—Telegraph—Postal Service—Good Roads—Newspapers—Magazines—are some of these ties. Turn forward to the map of page 69 in Part II. Here you have the vast network of the railroad system of the United States before your eyes. See how it reaches in all directions touching practically every community of any considerable size in the whole country. The railroad is one of the greatest ties for binding together a people

¹ All America has 375,000 miles, so the United States has three-fourths of the mileage in all America.

that are spread out over a large stretch of territory. And one of the most important facts for you to remember is that the people of the United States—106,000,000 in number—are spread out over an area that is almost as large as all of Europe put together.

Turn to the population map of Fig. 3 on page 9 in Part II. Compare carefully the area of the United States with that of Europe. You will find the area of the United States in the second bar graph of Fig. 3, and the area of Europe and the other continents in Fig. 32A on page 82 of Part II.

Which of the leading countries is spread out over the largest territory? Do you think it would be as easy and natural for the people of California, Maine, Florida, and Texas to feel as though they were *one* people—just Americans—as for the people of different parts of England to feel that they were all English? or for the people of the different parts of France to feel that they were all French? and the Germans? the people of Switzerland? of Denmark? of Holland? of Belgium?

Do you think the size of a country in number of square miles has anything to do with this feeling on the part of the inhabitants of being *one people*? What has it to do with it?

What have railroads and telephones, telegraphs and automobiles, newspapers and magazines, to do with this feeling?

To the Teacher: At this point there is an opportunity to have the class see the importance of this question. Point out to them how great distances in a country like the United States, Russia, China, make it difficult to develop a real spirit of unity. Also make it clear to them how the different ties, such as we have mentioned, have brought about an astonishing amount of unity in spite of the natural obstacles. For example, show how the government educated our people in 1916-17 to want to enter the World War by a widespread campaign through newspapers, motion pictures, and other ways.

EXERCISE

Where Are the Important Railroad Lines?

In the exercise on "Where the food for your dinner table comes from," you studied the location of the more important railroad lines of the country. People in America should really know where these railroads are in order to understand things that are happening in other parts of the country. Table III gives a list of the larger trunk lines of the country, together with the approximate number of miles of track in each system.

TABLE III

TABLE III		No. of Miles
1.	New York, New Haven & Hartford (with allied lines)	7,000
2.	New York Central (with allied Vanderbilt lines)	23,000
3.	Pennsylvania (with allied lines)	14,000
4.	Southern Railway (with allied Morgan lines)	29,000
5.	Northern Pacific	(with allied Hill lines) 28,000
6.	Great Northern	
7.	Union Pacific (with allied lines, formerly Harriman's)	34,000
8.	Chicago, Milwaukee & St. Paul (with allied lines)	10,000
9.	Atchison, Topeka & Santa Fe (with allied lines)	11,000
10.	Southern Pacific (with allied lines)	10,000
		<hr/> 166,000

These ten railroad systems control about 65 per cent of all our railroad mileage.

MAP EXERCISE

1. On a blank mimeographed map of the United States draw approximately the route covered by each of these systems. Trace these in so as to show the cities and regions that they connect and the general region they provide transportation for.

2. Exchange papers with a neighbor and correct his work. Write on the left margin of the paper the name of any railroad which is clearly placed in the wrong region. We are trying only to learn the approximate location of these systems.

3. Return your neighbor's paper and receive your own. Now learn the location of any route that you may have missed by studying the maps in the railway folders or a large railroad map if you have one in your class room.

To the Pupils

Can anyone in the class obtain a large map of the United States which will show the principal railroad lines? If so, it will be very helpful to have it hanging in the room all the time. Our lives probably depend more upon the railroads than on any other industry, so we should know the important facts about them.

EXERCISE TO SHOW THE IMPORTANCE OF THE RAILROADS IN OUR LIVES

These days the magazines (like *The Outlook*, *The Literary Digest*, *The Independent*, *The Industrial Digest*, and others) and the daily newspapers contain many articles about our railroads. Bring to class clippings from them which will show the importance of railroads in our daily lives. No doubt each of you knows things that have happened recently which pertain to railroads. Tell the class any anecdotes that you can gather at home or from other places.

When you have some leisure for reading about our railroads here are some interesting books on the subject:

To the Teacher: We suggest that one or two class exercises be spent upon such topics as (1) Railroads and steamships as freight-carriers; (2) The provision of railroads for the safety of their passengers; (3) The work of various employees of transportation lines, such as the engineer, the conductor, and the train despatcher; the pilot and the captain on steamships; (4) How our railroads and inland waterways help our trade; (5) What transportation means to the farmer, the business man, and the city-dweller. The following books will be helpful for these exercises:

1. Allen, Nellie B.: *United States*. Ginn & Company, New York, 1910. Pages 43-53.
2. Carter, Charles F.: *When Railroads Were New*. Henry Holt & Co., New York, 1910.
3. Chamberlain, James F.: *How We Travel*. The Macmillan Company, New York, 1918.
4. Crump, Irving: *The Boys' Book of Railroads*. Dodd, Mead & Co., New York, 1921.
5. Fisher, Elizabeth F.: *Resources and Industries of the United States*. Ginn & Co., Boston, 1919. Pages 200-219.
6. Howdon, J. R.: *The Boys Book of Railroads*. Frederick A. Stokes Company, New York, 1909.
7. Hungerford, Edward: *The Railroad Problem*. Particularly Chs. 3-6. A. C. McClurg, Chicago, 1917.
8. Mowry, W. A. and Mowry, A. M.: *American Inventions and Investors*. Silver, Burdett & Co., New York, 1900. Pages 187-244, 258-277, 286-297.
9. Rocheleau, W. F.: *Great American Industries—Transportation*. A. Flanagan Company, Chicago, 1914.
10. Tappan, Eva M.: *Travelers and Traveling*. Houghton, Mifflin Co., Boston, 1916.
11. Washington, William D.: *Progress and Prosperity*. National Educational Publishing Company, New York, 1911.

6. DOES AMERICA USE HER WATERWAYS?

Have you ever talked to a foreigner who was visiting our country for the first time? What do foreigners say about our ways of transporting people and freight? First of all, they marvel at the thousands of miles of railroads extending from coast to coast; then at the heavy locomotives and the long trains. They are amazed at our train schedules, the frequency of trains from place to place, the comforts and conveniences of travelling by night, our Pullmans and porter service. They are surprised at not finding first, second, and third class coaches with a different fare for each as in their own countries. And they can hardly believe that they can check their baggage when they buy their tickets, and that it will be transferred from place to place without any concern on their part and reach their destination when they do. In all countries of Europe the passenger must see that his baggage is put on the train he takes, and if he transfers to another train that his baggage goes with him; there is no one to look out for it but himself. So we are very proud of our railroads before foreigners.

But while we boast of our railroads, they have something else to boast about which might put us to shame. They look at our lakes and rivers and ask why we are so wasteful of the cheapest method of transportation there is? You have already seen examples of the fact that we do use our Great Lakes and many of our rivers, but Europeans say we do not begin to use them for transportation as much as we could, and they point out that the United States is abundantly supplied with waterways. While the American people have been occupied in building up a tremendous system of railways, the Europeans have been developing their waterways and they ask us why we have not developed ours. Why haven't we?

Turn back to the relief map of Fig. 21 and study it with Fig. 34 which shows the navigable streams and canals of the United States. (For a stream to be navigable it must have a deep enough channel for freight and passenger vessels to pass through it.)

Why do these rivers take the direction they do?

Trace on your wall map the direction in which the following rivers flow: (1) Mississippi, (2) Missouri, (3) Connecticut, (4) Hudson, (5) Monongahela, (6) Delaware, (7) Susquehanna, (8) Alleghany, (9) Illinois, (10) Red.

If you were asked to tell in a sentence where the navigable waterways of the United States are, how would you tell it?

Do you see any relation between where the waterways are and where the American people are? Make a statement telling what the relation is.

MAP EXERCISE

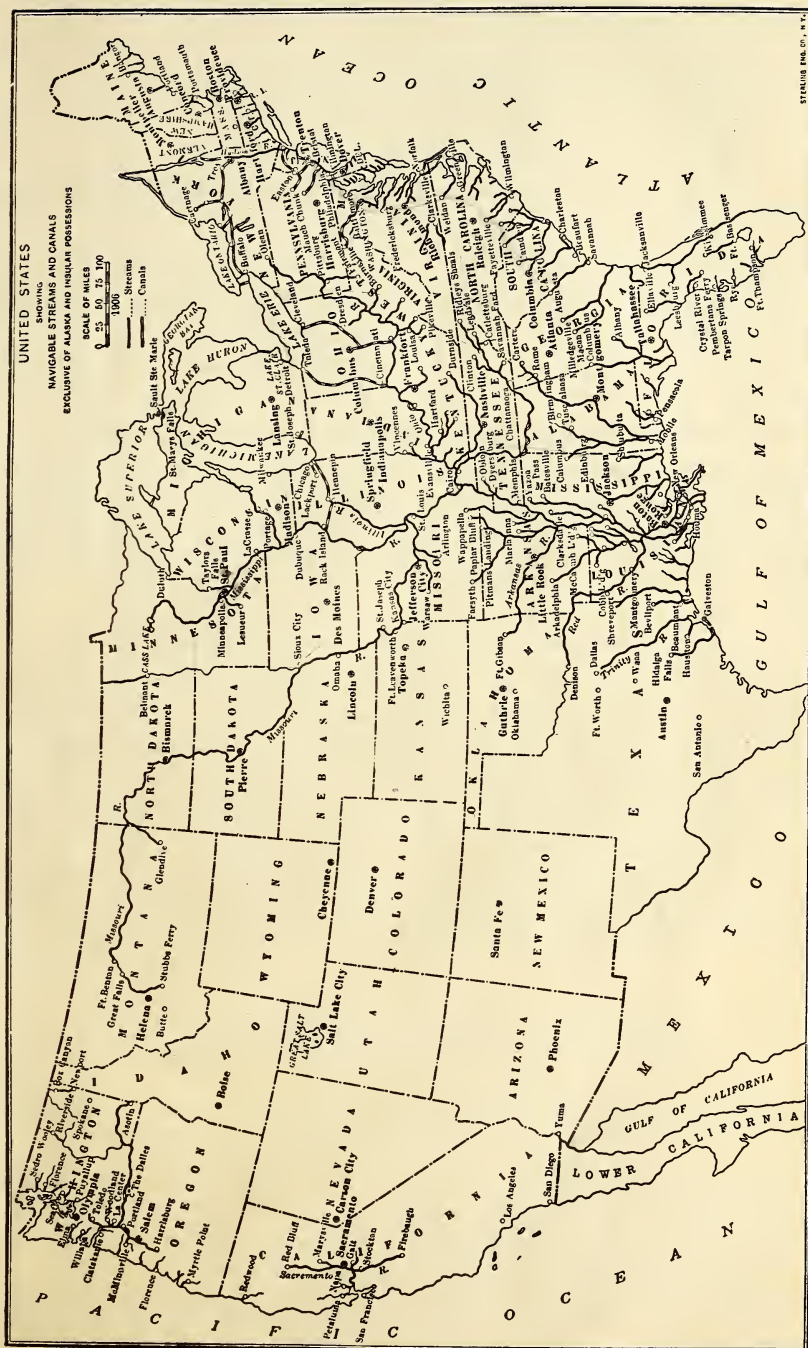
1. On a mimeographed map of the United States which traces the rivers, but does not name them, locate the following rivers, lakes and canals: Hudson, Superior, Mississippi, Delaware, Huron, Missouri, Connecticut, Erie, Sacramento, Columbia, Ontario, Red, Michigan, Sault Ste. Marie, St. Lawrence, Potomac, Erie Canal.

2. Exchange papers with your neighbor. Correct his paper, writing in the left-hand margin the name of each river or lake incorrectly located. Return his paper and receive your own.

3. Learn the location of each river, lake, or canal which you missed.

To the Teacher: Following this exercise we suggest that you have a brief wall map exercise, reviewing the location of these rivers and lakes, and recalling the answers to questions asked through this section.

Now locate each of these rivers, lakes, and canals on the wall map in your class room.



HOW EXTENSIVE ARE OUR INLAND WATERWAYS?

The United States has about:

25,000	miles of	navigable rivers
25,000	" "	rivers that can be made navigable
2,120	" "	canals
2,500	" "	sounds, bays, etc.
1,100	" "	canals can be added by connecting bays and sounds along the coast.

Thus we have a total of 55,000 to 60,000 miles of inland waterways.

Does your study of the relief map of Fig. 21 and of the map of navigable rivers, Fig. 34, tell you why we have so many miles of rivers in the Ohio and Mississippi Valley regions, and so few west of Minnesota, Iowa, Missouri, Arkansas, and Louisiana? Tell the class what you think is the reason.

We found that the greatest proportion of our people are concentrated in the northeastern part of the country? Why are there not more people in the Mississippi Valley regions since there are so many rivers there? What are the principal kinds of work done by the people who live in the Mississippi Valley? What are the chief occupations of the people in the northeastern zone?

NAVIGATION OF RIVERS AND THE LOCATION OF CITIES

Study Fig. 34 again. Do you notice how sharply the rivers all along the Atlantic coastal plain break off at certain points? Trace each one beginning in the extreme south at Columbus, Mississippi, then Tuscaloosa and Montgomery, Ala., Macon, and Augusta, Georgia. Why is the river that Carters is on navigable so far from its mouth, while the river that Augusta is on is navigable for only such a short distance from its mouth?

Now find Columbia and Camden, S. C.; Fayetteville, N. C.; Richmond and Fredericksburg, Va.; Washington, D. C.; Philadelphia, Pa.; and Trenton, N. J. On the map of Fig. 34 draw a line connecting each of these cities.

Why Did These Cities Grow Up Where They Did?
And Why Are These Rivers Navigable Up to These Points?

The geographers call the line such as you have just drawn THE FALL LINE. Does the name tell you what it means? The "Fall Line" is the line that connects the places on rivers where "water-falls" occur. It also connects the first city or town (on the way from the mouth to the source) of each river. Study the relief map, Fig. 21, again. Do you see about where the line you have drawn would appear on this relief map?

When the first English colonists came to America in 1607 (landing at Jamestown, Va.), in 1620 (landing at Plymouth, Mass.), and usually in the decades following, they sailed into the bays and inlets along the coast and

up the rivers. When the Virginia colonists went inland to settle, they went by boat up the James River as far as the falls. Many of them stopped there and settled, although a few pioneers pushed on into the interior highlands—into what was known as the “back country.” So at the “falls” in the James River a village, later the city of Richmond, grew up.

Philadelphia was settled in the same way by those who attempted to go up the Schuylkill River and were stopped by falls there. Similarly Baltimore was located miles inland from the Chesapeake Bay. Trenton, New Jersey, grew up where it did largely because of the falls on the Delaware River. So, too, with Macon, Ga. and Montgomery, Ala. and Columbia, S. C.; the falls in the rivers were one of the chief causes for the location of all these cities.

COMPARISON OF INLAND WATERWAYS IN AMERICA AND EUROPE

See if you can find a map in your geography which shows the navigable rivers and canals of Europe. Notice how the Germans, the French, the English, and the Austrians have dug canals between their rivers. The Vistula, the Oder, the Elbe, and the Weser are all connected by canals with the Rhine region. Locate each of these rivers on your wall map.

Canals make it possible for the merchant of Prussia to ship goods across country to the Rhine River by water without disturbing the bulk of his freight traffic. (Over what route would the bulk of his traffic be shipped to Amsterdam if he lived, say in Hamburg?) Large sums of money have been spent in Europe on straightening rivers and deepening channels, with the most important result that goods can be shipped by direct routes, where the distance is shorter, instead of going by the roundabout route of the Baltic Sea. Isn't it interesting to see how business people are always trying to find ways to use the most direct routes to those sections of a country or a continent that are thickly settled? The building of canals in the northern region of Europe is a good example of this.

Turn to the population map on page 9 of Part II. Do you see how dense the population is in the neighborhood of Holland and Belgium and the northwestern part of Germany? Notice how much thinner it is in the Vistula and Oder regions. Can you see any connection between the density of population and the building of canals in the northern part of Europe?

Now turn forward to the relief map of the United States, Fig. 21. Which rivers would help to move the great quantities of manufactured goods, wheat, corn, etc., from the Middle West to the East where they are partly used by the large population and partly shipped across to Europe? In which direction do these rivers flow? Does their direction help in the matter of eastward shipping?

Why is the direction of these rivers what it is? What does the “lay of the land” have to do with it?

Can you see a reason now for our having spent billions on railroads connecting the East with the Middle West when we have spent only millions on the improvement of our waterways? What a striking comparison is brought out by the next table! It gives you the number of miles of canals in the several countries. From the appendix of your geography fill in the area of the countries. How does the area of the United States compare with the area of the other countries?

TABLE IV

Country	Area	No. of Miles of Canals in 1920
France	419	3052
Germany	179	1500
England	58,500	1202
United States	3,600,000	2120

What conclusion do you draw from the facts of Table IV? Have we improved our inland waterways as Europe has improved hers?

What about the Great Lakes? Do they not form a fine east and west waterway? Yes, our Great Lakes freight traffic, especially in ore, coal, wheat, and other grains, is truly tremendous. Ships go by the thousand through the lakes and the locks and short canals that have been built around the "falls" at Sault Ste. Marie and Niagara. (Find these on the map.) The route appears to be open clear to the Atlantic Ocean, does it not? 1700 miles of broad, reasonably straight waterway. But there are serious drawbacks. First, the channel of the St. Lawrence River and the locks and canals are only deep enough to take boats that "draw" 14 feet of water. This means that the larger ocean freighters cannot go clear through, say to Chicago, and Duluth, Minn. Furthermore, the St. Lawrence and the Lakes are so far north that they freeze over for three months during the winter. Do you see a reason in this that would make people hesitate to spend money to improve a river like the St. Lawrence and to build locks and canals around rapids and falls?

The worst obstacle has been the Niagara Falls. It is between what lakes? You will read much about the way the Erie Canal was built a hundred years ago (1817-1825) and how people hoped that it would permit ships to go clear through from the west to the ocean and so over to Europe. But the ships grew in size more rapidly than the canal grew in depth. So even today ocean-going traffic through the Erie Canal has not developed to any great extent. Only one-fiftieth as many tons of freight were carried by the Erie Canal as were carried by the Sault Ste. Marie Canal at the eastern end of Lake Superior. The heaviest freighting through the "Soo" Canal, as the Superior Canal is called, is iron ore going from the mining region of Minnesota to the eastern steel mills, coal being carried on the return trips.

Do you see how much handling of cargoes is necessary at Buffalo? Do you see a reason why merchants prefer to ship by the railroads? What is it?

EXERCISE

1. Give examples to show what happens to cities when railroads break down.

2. On a blank mimeographed map indicate approximately where the food on your dinner table comes from.

3. Give reasons to prove that each of the following things depends upon transportation.

A. 1. Cities; 2. Factories; 3. The use of coal; 4. Farms.

4. What conclusions do you draw from reading *A Picture Story of a Century of Transportation*?

5. Make a little summary which will answer the question: *Does America use Her Waterways Well?*

6. What facts that you have read indicate that America's railroad system is vast, speedy and luxurious?

7. Make a list of ways in which people and goods are transported. How would you predict that people and goods will be carried 10 years hence? 25 years hence?

8. What do you think should be done to improve our transportation system?

9. Complete these sentences:

a. Transportation is convenient to both city and countryside.

b. The use of roads and the location of cities depends upon transportation.

c. America's railroads in number of miles and in speed are ^{greater}_{less} than those of any other country in the world.

(Which?)
d. A country of large territory must have united to bind her people together.

e. The railroads of America today are consolidated scattered. 15
independent (How many?)

(Which)
railroads control about 65 per cent of all our railroad mileage.

f. Most of our mileage is concentrated in the North section of the United States.

g. While Americans have developed most their road, the Europeans have developed most of their water.

h. The navigable rivers are chiefly in the Eastern section of the United States.

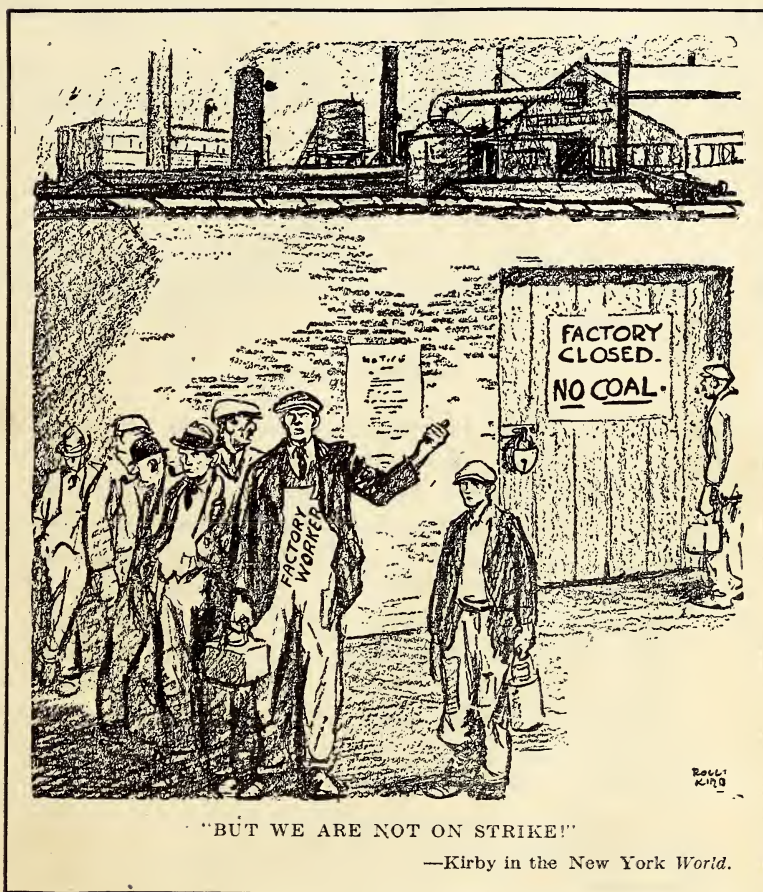
i. Most of our important cities are located on Water; many cities on the Atlantic Coast are located on what is called the "Fall Line."

j. Water transportation in America is handicapped by shallow.

10. Prepare a summary for your notebook about: *Transportation—Crucial to City and Country.*

V. COAL: AMERICA'S MOST IMPORTANT NATURAL RESOURCE

INDUSTRIES AND CITIES DEPEND UPON COAL



From "Literary Digest, Sept. 9, 1922.

FIG. 35

What is the most important conclusion that you draw from a study of this cartoon?

70,000 WORKERS TO LOSE JOBS— FORD ANNOUNCES SHUT-DOWN— CLAIMS COAL SHORTAGE AS CAUSE

Detroit, Sept. 10, 1922.—The Ford Motor Car Company posted notices today to the effect that its shops will shut down Sept. 12th for an indefinite period, unless a sufficient supply of coal can be secured. . . .¹

How does the clipping illustrate the importance of coal in our lives? Can you think of any natural resource or any industry that has a more important relation than coal has to our daily living?

Can you find other newspaper or magazine clippings that show the importance of coal? Read them to the class. Post them on the Bulletin Board in your class room. Make notes of such things in your notebook.

A survey of twenty New York State municipalities shows only one-tenth of the winter's coal needs on hand and a hundred schools in New York City are said to be without coal.²

In the fall of 1919 the coal miners threatened to strike. President Wilson appealed to the men not to do this on the ground that:

"It is recognized that the strike would practically shut off the country's supply of its principal fuel at a time when interference with that supply is calculated to create a disastrous fuel famine. All interests would be affected alike by a strike of this character, and its victims would be not the rich only, but the poor and the needy as well—those least able to provide in advance a fuel supply for domestic uses.

"It would involve the shutting down of countless industries and the throwing out of employment of a large part of the workers of the country. It would involve stopping the operation of railroads, electric light and gas plants, street railway lines, and other public utilities, and the shipping to and from this country. . . ."³

How does this quotation show our dependence on coal?

¹ Based on the facts of the closing of the Ford factories in Sept. 1922.

² "Plans to Meet the Coming Coal Famine." Literary Digest, Sept. 9, 1922, pages 7-8.

³ Quoted from a statement given out by President Wilson Oct. 25, 1919, by the Chicago Daily News Almanac and Yearbook, for 1920, page 754, Chicago, Illinois, 1919.

"Henderson deliver any coal today, Mary?" inquired William Baker when he reached his home in Elizabeth, New Jersey, after a long cold ride one evening in early February.

"No," replied his wife, "He says the ice on the river has held up the coal barges. They can't get up to the wharves, so the railroads can't deliver. There should be plenty of coal but its held up by this awful weather we've had the last three weeks."

"Well, I don't know what we're going to do. Not enough in the bin to last more than today."

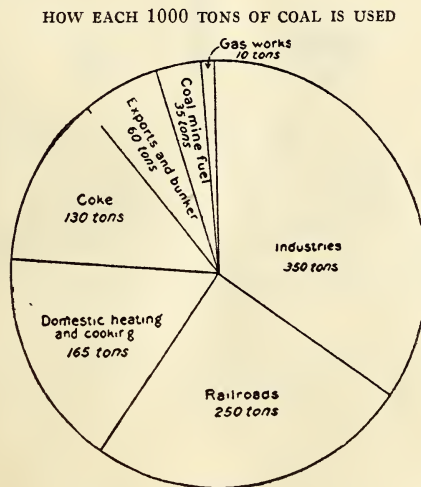


FIG. 36¹

What does Fig. 36 tell you about the way in which the lives of people in cities depend on coal?

What proportion of our coal supply goes to heating our homes? What to running our factories and mills? What percent to keeping our railroads going? Notice that 13 per cent goes to making coke. One of the largest uses of coke is in smelting iron ore.

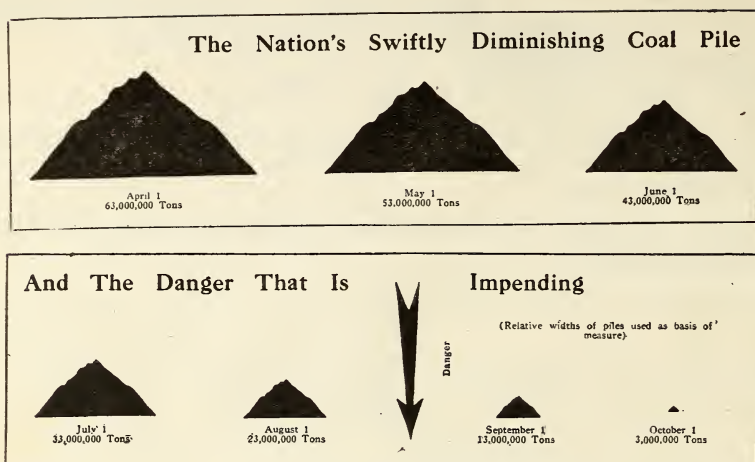
What do you think would happen to the iron and steel business if our coal supply gave out?

What proportion of the coal mined is used up in the very mining of the coal itself?

What proportion do we ship out to other countries?

¹ Courtesy of Industrial Digest, August 19, 1922.

THE COAL SHORTAGE OF 1922



Courtesy of "Industrial Digest," July 8, 1922

On April 1 the total coal reserves of the country were 63,000,000 tons. The normal rate of consumption is now 10,000,000 tons a month in excess of production from non-union mines. The minimum reserve for safety is 20,000,000 tons; the lower graph shows a condition that might result the second week in August if meanwhile steps are not taken to end the coal deadlock. If, after this turning point early in August, reserves continue to be depleted, industrial production will have to be curtailed.

FIG. 37

Do you remember in the coal famine of 1918-1919, how factories closed and children were kept out of school? how we could not go to theatres in the evening and how Sunday services in the churches were not held for weeks?

From April 1922, when the miners' strike was declared, the country was rushing nearer to danger month by month. Fig. 37 shows how the coal pile rapidly dwindled. The figure was printed in July to show what would happen if the strike continued until October. It actually ended, however, in September, but by that time what had happened to our reserve of mine coal? If the strike had not been settled when it was, what would have happened to our factories and railroads? Which would have stopped running first? Why was the "coal pile" growing smaller during the hot summer months?

Have you still the idea that most of our coal is used for heating buildings, so that the winter is the time to worry about a coal shortage?

Our national government, our state governments, our city officials, and private associations like the United States Chamber of Commerce, the American Railway Association, and the National Association of the Manufacturers, held meetings during the months of the strike to decide what should be done. The State of New York appointed a Fuel Administrator. His first act was to order coal dealers "to deliver to no customer more than a two weeks' supply of the domestic size of anthracite." Why did he issue such an order as this?



Where iron and steel manufacturing is done in America.

FIG. 38

WHERE ARE OUR COAL FIELDS?

HOW DOES THEIR LOCATION AFFECT WHERE PEOPLE LIVE?

Be ready to point out on the wall map the region in America where people live most closely together. Turn back to Figs. 5 and 6 if you cannot remember. Fig. 20 will give you a still better idea. Remember that the zone marked out on Fig. 20 is called the *Industrial Zone* as well as the *Immigration Zone*. Here 32 of the 50 largest cities in the United States are found.



Courtesy of Industrial Digest,
August 5, 1922

Where the coal of America is deposited in the earth

FIG. 39

Now one of the industries most closely connected to the coal industry is that of iron and steel manufacturing. The iron ore as it is taken out of the earth has to be "smelted"—that is, heated to a very great heat—so as to remove the impurities from the iron. Soft coal and coke (made from coal) are of course the fuels commonly used in this work of smelting the iron ore. They are used in such huge quantities that people have learned it is economical to build their steel mills near the coal deposits. That is true not only in America but in Europe, too. You will find, when you study in Part II about the great steel industries of France and Germany that although France has the greater iron deposits much of the smelting is done in Germany because of her greater coal deposits. So France ships much of her iron to Germany to be smelted.

Having Fig. 38 in mind then, where would you expect to find the great soft coal¹ deposits of our country? In Florida? In California? Texas? Nebraska? New York? the New England States?

How does Fig. 39 help you to answer this question? Where are the chief soft coal beds? Where are hard coal (anthracite) beds? Point them out on the wall map. Do you see a very good reason why the iron and steel industries are centered in the northeastern region? Why great steel plants are concentrated about Pittsburgh, and scattered through Pennsylvania, Ohio, Northern Indiana, and Illinois?

MAP EXERCISE

1. On a blank map of the United States shade in the coal deposit regions of the country.
2. Exchange papers with your neighbor. Correct his map by comparing it with Fig. 39. Draw a line from each misplaced region out to the margin placing a cross at the end of it. Then return his paper and receive your own.
3. Study Fig. 39 very carefully and learn the locations of the regions which you may have missed.

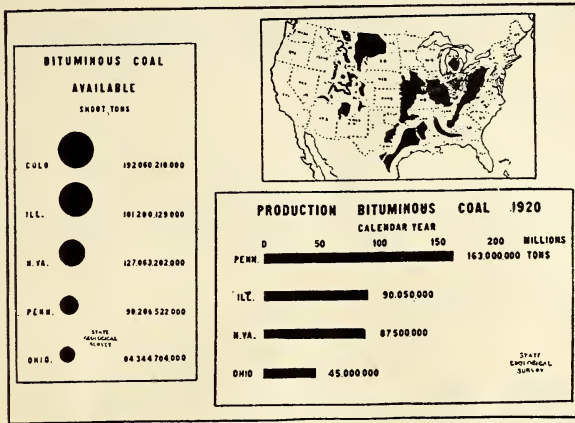
Where do you think the great steel mills about Chicago draw their coal from? Where do those about Pittsburgh draw from?

The bar graphs Fig. 40 will give you further facts about where our soft coal comes from. Which state produced the most in 1920? What other states produced large quantities?

Do the states which produce most coal nowadays have the largest amount left in the ground? The circle graphs of Fig. 40 will give you the facts for answering this question. Are you surprised to find such large soft coal deposits in Colorado? in the Dakota region?

¹ Soft coal is called "bituminous." See page 72 for discussion of this.

When you were studying why particular cities grew, did you take Denver as an example? Do you see now one reason for an inland city growing up where Denver did, even though there are no important waterways? What chance do you think Denver has of growing rapidly in the future?



Courtesy of Industrial Digest, 1922

FIG. 40

WHO PRODUCES AND USES THE WORLD'S COAL?

The figures and maps showing our coal production give one the feeling that the United States must produce enough to supply a large part of the world. If you will turn forward to page 33 of Part II, you can find out how much of the world's supply the United States does produce. What three countries, according to Fig. 16, produce more than four-fifths of the world's coal supply? Where does the United States stand in the list?

Are the countries which produce the coal also the ones who use that coal?

Which countries do you think must export coal? Why do you think that?

From what you know about the countries of the world, would it be true to say that the leading countries are the greatest coal producers? Are there any exceptions to this?

EXERCISE

See if you can fill in the blanks correctly:

A nation needs coal

What does she need coal for?

1. When she gains colonies.
2. When she exports large quantities of products.
3. When she imports large quantities of products.
4. If she is chiefly a farming country.
5. If she is chiefly a manufacturing country.
6. If she depends upon efficient transportation.
7. When her people live chiefly in cities.

Do you see how important coal is to a nation, and how every nation must have a large supply of it?

HOW LONG HAVE MEN BEEN ABLE TO USE COAL?

Is it your thought that people have always burned coal to heat their homes? to run trains and mills? to make power by which streets could be lighted? No, though the world may be millions of years old, man has learned how to burn coal and to run machines by steam power only within the past 150 years.

Have you any idea how old the earth is? We really do not know. For a long time scientists have been trying to find out and to discover when life began upon the earth. Some people have thought that perhaps the earth is as old as 1 billion, 600 million years; others—Lord Kelvin, the English scientist, for example—have thought that it might be as young as 25 million years. Think of the difference in their estimates, 1,600 million and 25 million. Yet think what a long time even the smallest estimate is — 25 million years! The great English scientist Huxley estimated that the earth was about 400 million years old.

Of course we cannot be at all sure about the length of time the earth as we know it now, has been in forming, but we do know that it has taken a very great number of years—surely scores of millions, perhaps hundreds of millions of years.

We want you to get a feeling for this great stretch of time from Fig. 41.

This Time Line compares the very great age of the earth (estimated by scientists) with the great stretch which it took for coal to form. On it is shown the very short time that people have used coal.

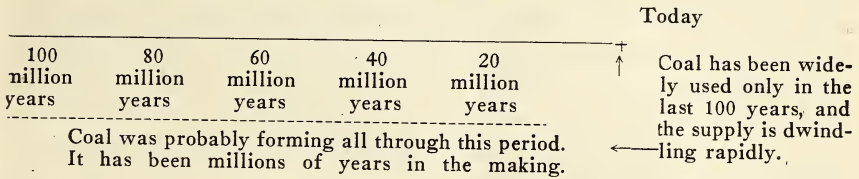


FIG. 41

How long will our coal supply last, and what will we do when it is used up? (See page 68 and pages 73 and 74.)

We will not take time here to discuss how the earth came to be formed. What we are interested in here is to see what a very small fraction of all these millions of years men have been known to be living on the earth; and then we want to see how very very short in comparison has been the time that coal has been used to produce steam power. It is difficult to realize that only 50 years ago people depended altogether upon wood for their heat; that they had little or no iron; that even in the few cities we had along the Atlantic Coast in 1755 to 1800 factories were almost unknown and manufacturing was done almost entirely by hand.

What brought about the change? More than anything else, man's discovery that coal could be burned in boilers, that steam could be made from hot water, and that the pressure of steam could be used to move things. In other words, it was the steam engine that brought about the change, and that happened before 1700. Turn back to the Time Line of the Industrial Revolution, Fig. 10, and study carefully the way in which steam engines developed.

Make a list of all the machines and industrial processes listed on this Time Line that demanded the use of coal. Where was iron first smelted with coal? How surprising it is that the first crude engine was made as recently as 1695 when the earth was millions of years old and men had been living on it at least many thousands of years! In 1695 Newcomer, an English mechanic, perfected a pump to raise water out of the coal mines. Of course, there were few mines at that time, although coal had been known for several hundred years, and Englishmen had learned that underneath their soil was a good deal of this rock substance that would burn and make great heat. But, as the mines they had were deepened, water accumulated in them and prevented the miners from going down and taking out the coal. So Newcomer

er's pump was an answer to a great need for some way of taking the water out of the mines. It could raise water through a distance of many feet and was reasonably successful in helping to carry on the work of the English mines. This pump was really the first steam engine.

Time went on, however, throughout the 1700's and it was more than half a century before Englishmen learned that the same ideas which Newcomer had used to make his pump could be employed in making an engine which would move things. Of course, during the years from 1695 to the middle of the 1700's, a great many men were experimenting, to invent an engine that would make things go. Finally in 1765, James Watt succeeded in perfecting one which would run by the pressure of steam. And then men were quick to see that what they needed next was fuel to heat the water in the boilers to run the engines. A great quantity of coal was just below their feet waiting to serve their purposes.

Then what an astonishing thing happened! Almost at the same time that Watt and Stephenson and the other English engineers were busy improving the steam engine and learning how to make it draw loads over tracks, other Englishmen were inventing machines which would do the work that men had been doing with their hands.

Turn back to the Time Line again, Fig. 10. What were the first inventions to follow those of Watt and Stephenson? Do you notice the series of inventions in the textile industry, in the steel and iron industry, and in transportation? How would these inventions help to explain the increasing use of coal as shown in Table V?

TABLE V.

THE AMOUNT OF COAL USED IN THE UNITED STATES, 1850-1919¹

	TONS
1850 -----	7,000,000
1860 -----	14,000,000
1870 -----	33,000,000
1880 -----	91,000,000
1890 -----	157,000,000
1900 -----	269,000,000
1910 -----	404,000,000
1919 (last figures available) -----	605,000,000

From this table, make a graph in your notebook showing how the use of coal in our country increased from 1850 to 1919.

The rapid rate of increase in our use of coal is causing many people to fear that our supply will soon be used up. Experts say that it will not last more than about 150 years more. Do you think we waste coal? See if you can find out and report to the class the ways that we waste it if we do.

¹ The figures for 1850-1900 are based upon a chart in "The Conservation of Natural Resources," by Van Hise, C. R., page 24. The Macmillan Company, New York, 1921. The figures for 1910 and 1919 are taken from The Statistical Abstract of the United States for 1919, page 549. Government Printing Office, Washington, D. C., 1920.

To the Teacher: We suggest that you assign the task of finding out about our wastage of coal to a few pupils for class reports. Books on the Conservation of Natural Resources contain many illustrations of waste. See bibliography at the end of this unit.

One invention led to another, and as engines were perfected manufacturing processes were improved. The whole *Industrial Revolution* really hinged upon the discovery of the way to make things go by steam power. The steam power that could make machines go was more and more taking the place of human energy, and industrial efficiency increased with the increase in the use of machines.

But the thing that made steam power possible was coal. Fortunate were the nations who had large supplies of coal. Turn to page 33 of Part II and see if you can tell from Fig. 16 whether there is any correspondence between the nations that lead industrially and those that have the greatest coal resources. What is your conclusion? Write it in your notebook.

With the use of coal naturally came the great use of iron and steel. Cities grew up in great numbers, and with their growth came the building of hundreds of thousands of miles of railroads, the tying together of manufacturing communities, the construction of steel ocean-going ships, the lacing together of all parts of the world with cables and telephones and telegraph wires and wireless communication. For the first time in the history of the world there came an opportunity for people to replace hours and hours of hand-labor by the use of machines. For the first time in all the thousands of years through which man lived upon the earth, people had found a way to get their work done in short spaces of time. At last there could be leisure hours to enjoy life, to improve home conditions, and to discover the better and richer things that life held out to them. What actually happened as a result of these discoveries? Was life improved and enriched for the "slaves" of toil? How do people that work with machines spend their days? Amid happy, healthy surroundings? And do they have long, restful evenings to enjoy good books, hear good music, and go to good plays? Have you ever visited a machine shop and seen men at their work? If not, can't you arrange to do so? If you do not think all people profited by the introduction of machinery, do you think some did?

Write down in summary form the ideas that you got from reading the last three paragraphs.

As you study on through this pamphlet, watch for examples of the way in which living upon the earth has improved as the coal, iron, and steel era has developed.

HOW COAL WAS MADE.

You have the good fortune—if it is good fortune—to live in a country which has under its surface the finest and largest supply of coal that is known to exist any place on the earth. How did this coal happen to be where it is? Why should we, rather than the Arabs of the desert, or the natives of Java and Tahiti,—why should we have inherited this great natural resource?

How was coal made? How long will it last? Will there be something to take its place? How long will that last?—These are questions which Americans and Englishmen and Germans and Frenchmen and people of every modern nation are beginning to ask themselves very seriously.

First, how was coal made? Well, the story is shrouded in a great deal of mystery and uncertainty, but gradually as scientific knowledge has developed during the past century or two, students of the matter have been able to piece together a story which seems quite believable. Of course it may be that, like so many of the beliefs of men in earlier times, some aspects of the present theories about the formation of coal will have to be changed, but the account we will sketch is what scientists of today think probably happened.

Turn back to the relief map of Fig. 21. Notice how the Appalachian Mountain system runs along the eastern part of the United States. Notice the stretches of mountain land through New England—the Green Mountains, the White Mountains, the Berkshires, and then look across to the tremendous ranges of the Rockies and the Sierra Nevadas all through the western part of the country. Between the eastern and western highlands lie the broad central plains of the Ohio and Mississippi Valleys.

Find in your geography a physical map which shows the “lay of the land” on the other continents. Notice the Pyrenees of Spain, the Alps across northern Italy and southern Austria, the highlands of the Balkan Peninsula and the Caucasus. Do you know how these mountain ranges were formed?

It is believed that during the millions of years while the world's continents were gradually forming, the mountain systems came about through a shrinking of the crust of the earth. While this process was going on, there were no animals in the sea or plants on the land, no life of any kind even a million or two years ago. Meanwhile an intense heat was being stored up in the earth, and as the crust cooled off the heat burst through at certain places, causing great upheavals on the earth's surface. When this matter cooled again, there were long ridges and deep depressions, and where such explosions were very violent, the heated gases and molten materials were thrust so high that great peaks were left on the earth's surface. There are still a number of these *active volcanoes*, as they are called, in different parts of the earth. One of the best known, of course, is that of Mt. Vesuvius in

Italy. Look it up on your map. Can you find others in your geography? So this is the way we came to have highlands and lowlands on the various continents of the earth's surface.

Scientists believe that millions of years ago there was very heavy vegetation in the regions where our coal fields are now. They have found evidence for the fact that there were great swampy forests and that every now and then large amounts of earthy materials were washed down on them and adjacent lands. The forests were submerged under rock upheavals or killed by the rushing in of great quantities of water from the oceans or buried under heavy layers of soil. Then tree trunks, leaves, branches, massed together making a hard layer of vegetation. But each time the forests were killed, others grew up after a period of time, and it is believed that this cycle of processes was repeated at least several times. It is in these regions where layers of vegetation formed one on another that our coal is found.

It may have been 70 million years ago, scientists think, that a rapid change started in the rocks on the earth's surface. It is believed that the surface gave way under the ever-increasing load that was put upon it, and that a great gouge was made running upward to the Atlantic Ocean in what is now northeastern America.

The edges of the upland pressed in against each other with the force of great heat pressure and crushed the depressions together until the result was all sorts of irregular peaks and ridges. When the mass was finally shaken down into form, it separated into two big highland ranges with an immense valley between. This we call the Great Valley today. Find the Great Valley on your map. So the coal that formed in these regions is accounted for by the decay of layer upon layer of matted vegetation which was heated very hot and thrown up near the surface of the earth again.

About 50 million years later than this—that is, 20 million years ago—another great convulsion raised up the Rocky Mountains of North America and the Andes of South America and the Alps and other European mountains. These mountains that were made so much more recently than the Old Appalachians, for instance, are spoken of as *young* mountains.

In your geography book compare the pictures of scenes in the Appalachians with scenes in the Rockies. Do you see how rounded and smooth the Appalachians are in sharp contrast with the rugged rocky peaks of the western mountains? The Appalachian slopes are more gradual because during their longer life they have been slowly worn away by the weather. Rainfall dropping upon them century after century throughout the millions of years has slowly ground off the rugged peaks and sharp ridges. Do you notice, too, that the Appalachians have more forests?

So you see how long it has taken to make coal, the fuel our very lives depend upon. Let us not forget that it has been a process of millions of years—probably between 20 and 70 million. The layers that were transformed into

coal vary in thickness all the way from a few inches in some seams to sixty feet in others. In some places the coal was even thrown out to the very surface of the earth. As men have prospected about for it, they have found places where it could be scooped right off the side of the mountain. In other places it is lodged 1000 feet below the surface. It has been so much needed in this industrial age of ours that people have dug great coal shafts way down into the earth, and then out from the openings they have dug channels to follow the coal seams wherever they ran.

KINDS OF COAL

SOFT OR BITUMINOUS—HARD OR ANTHRACITE

The coal maps you have looked at refer to two kinds of coal—soft or *bituminous* and hard or *anthracite*. Do you know what kind is burned in the furnace that heats your house, or in the one that heats your school building? If you live near the eastern part of the United States you probably burn anthracite or hard coal. The map of Fig. 39 shows where the different kinds of coal are located in the United States. Notice that the anthracite is pretty largely in the eastern part of the country, especially in Pennsylvania. The surface of eastern Pennsylvania around Scranton and Wilkes-Barre is almost honeycombed with anthracite coal mines; in fact, the city of Wilkes-Barre has been almost completely undermined. Hundreds of miners work below the principal streets of that thriving city every day. The bituminous coal of the United States is found chiefly in the Appalachian highlands and in Illinois and Indiana. If you live in the Mississippi Valley, you are probably using some kind of bituminous coal.

How do you think it came about that these coals are so different? The bituminous is soft and very dirty, makes a great smoke, while the anthracite is slow to burn, lasts longer, and gives out great heat. The scientists tell us that the difference is due to the amount of heat and pressure to which the layers of vegetation were subjected in the "geographical revolutions" that convulsed our earth millions of years ago. The *bituminous* coal has a great deal of material in it which burns easily, such as oil, gas, tar. In the upheavals of the earth millions of years ago it was subjected to relatively little heat; the layers of rocks above it were practically the only pressure. The *anthracite* coal, on the other hand, is almost pure carbon. If you try to start a fire with the two kinds of coal in different ovens, you will notice how much more difficult it is to get the anthracite to burn, but you will also notice that once it catches fire it burns steadily and gives out much more heat than the bituminous does. Scientists say the anthracite was crushed down under the load of great mountains and at the same time was heated to white heat and literally roasted by the flames of terrific volcanoes.

An anthracite coal fire can be kept going in a heater all day with just one or two pokings, whereas a soft coal fire needs constant attention.

It is interesting to note that there is another kind of vegetable material which has been hardened and roasted throughout the ages. We use it commercially today, but it cannot be burned at all. Did you ever use *graphite* on your bicycles? Graphite came from the layers of material that were subjected to heat and pressure incalculably greater than that to which anthracite was subjected. The heat and pressure were so great, in fact, that the carbon—the material which would burn—was all burned away.

This, then, in brief is the story of coal. What was the most interesting thing to you in the story? What surprised you most?

HOW LONG WILL OUR COAL RESERVES LAST?

CAN WE REPLACE THEM?

Didn't it take an amazingly long time for the coal to be formed? Will your mind "take in" 20 millions of years? Think how long a time the life of a person is—60 to 70 years, let us say. Then think back, say one hundred times as long as that. If you can imagine such a stretch of time. That stretch is just the short space for which we know what man was doing on the earth. And that is so short, 7000 years, as compared with the length of time it took to make coal that we were not able even to represent it on our time line. (See Fig. 41.)

Now one of the most important questions that people face today is, *How long will the present store of coal in the ground last at the rate we are using it?* Many engineers have studied the matter. The reports they give us are very disquieting. They say that our coal supply *cannot last more than a hundred years*. Millions of years were required to make coal, but we have used it so rapidly that at the end of a hundred and fifty years we are forced to face the fact that probably only another century's supply is left!

... "Twenty million years ago all the coal we have or shall have was packed away in the ribs of the earth in seams varying from sixty feet to the thickness of a blade of grass. It is estimated that we still have in the world more than seven thousand billion tons distributed as follows:

North America-----	5,073,431,000,000
Asia -----	1,279,586,000,000
Europe -----	784,190,000,000
Australasia -----	170,410,000,000
Africa -----	57,839,000,000
South America-----	32,097,000,000

Total 7,397,553,000,000." ¹

Does this seem like a huge amount of coal? 7000 billions? To write it in figures requires 13 decimal places. We are not accustomed to using more

¹ Bruère, Robert W.: "The Coming of Coal." Association Press, New York, 1922. page 78.

than millions or billions, even in these modern days of gigantic things. But we are using such an enormous number of tonh of coal for our thousands of locomotives and factories, for houses and public buildings, and to do the countless other things of everyday twentieth-century life that our huge coal pile is dwindling very fast.

"Mr. D. B. Rushmore, chief engineer in the power and mining department of the General Electric Company, calculates that if our coal consumption were to continue to increase at the apparently normal rate of seven per cent each year, the life of our known reserves would be as follows:

Eastern District, which includes the most accessible and best quality of our fuel.....	59 years
Eastern, Central, and Southern Districts.....	65 years
Entire U. S. and Alaska, two-thirds of this being low-grade coals and lignites.....	84 years

"These figures are based upon the appraisals of the U. S. Geological Survey. They include coal in veins as shallow as fourteen inches, all coal whose ash content does not exceed thirty per cent, and all known deposits within six thousand feet of the surface. They are based on the optimistic assumption that two-thirds of the coal in the mines will be brought to the surface, a considerably higher recovery than has hitherto been achieved. Mr. Rushmore concludes that the evidence points unmistakably to an approaching scarcity of high-grade coal and increasingly higher prices."¹

Does it look as though our great grandchildren would have coal with which to heat their houses? Will they ride in trains driven by coal-burning locomotives? Will their factories be run by the steam from thousands of coal-burning boilers?

If we are using up our coal at such a terrific rate, can we replace it? Have men learned how to *make* coal? No, not as yet. Wonderful things are being done in our day, but so far no one has discovered how to duplicate nature's work of millions of years and make coal. Since it has taken such an enormous length of time to produce, we are faced with the fact that once we use our present supply coal is gone from man forever.

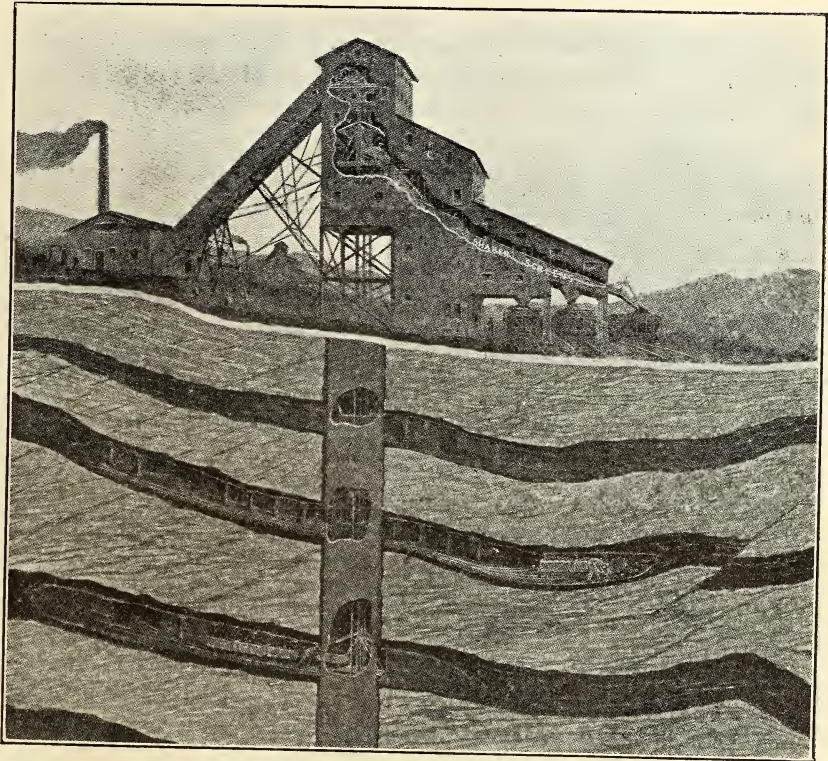
SUBSTITUTES FOR COAL

Are there substitutes for coal? How do the people who do not use coal heat their houses today? By burning oil? Yes, some people do. By burning wood? A few who live under rural conditions do. By electricity? Very few. Electricity is very expensive and so not available to many. Then, of course, even electricity has to be generated from something that makes heat, and coal is still the best fuel for that.

¹ Brûere, Robert W.: Op. cit., pages 79-80.

What about natural gas? Yes, but the supply of that is fast giving out, and has already given out completely in many places. So it cannot be counted on long.

These fuels—oil, natural gas, and wood—together with another source of power, water power, are the only possible substitutes for the rapidly decreasing supply of coal. In another pamphlet we will learn about their use, but at this time we can be sure of this: the supplies of oil, gas, and wood are also being very rapidly exhausted. The engineers tell us definitely that these fuels cannot last even as long as coal, and many tell us that petroleum will not last even thirty years!



Courtesy of Scientific American, October, 1922
How a coal mine is operated

FIG. 42

EXERCISE

Look up in the encyclopedia or some other book in your library, the answers to these questions:

1. What are the present reserve supplies of petroleum, natural gas, timber.

2. How rapidly are we using up these supplies?
3. How long will our supply of each probably last?
4. How much water power can be developed in the United States? How much is developed now? Do engineers think enough can be generated to take the place of coal?
5. Find accounts of the attempts to make motors that can be run by the heat of the sun's rays—sun-motors. (See such magazines as *The Scientific American*, or *Popular Science Monthly*.) Have such attempts been successful?
6. See if you can find accounts of attempts to use the waves of the ocean to run motors. Have these been successful?

SUMMARY

You have studied about the importance of transportation in the life of the American city. How much do the lives of city people depend on transportation? Be ready to give examples of this.

You have also studied about the importance of coal in the lives of the people. To what extent do the lives of city people depend upon a continuous and adequate supply of coal? Give examples of this.

To the Teacher: We suggest as a class activity that the pupils be assigned special reports on the coal-mining industry, using such topics as these: (1) A day's work in a coal mine; (2) How coal is mined; (3) Dangers and safeguards in coal-mining; (4) Waste in coal-mining. In the following list of books there are excellent descriptions and pictures of the coal industry. Those marked with an asterisk are suitable for the pupils' use.

*Allen, Nellie B.: *United States*. Ginn & Co., Boston, 1910. Pages 138-165.

Bruere, Robert W.: *The Coming of Coal*. Association Press, New York, 1922.

*Carpenter, Frank G.: *North America*. American Book Company, New York, 1898. Pages 211-218.

*Chase, A. and Clow, E.: *Stories of Industry*. Educational Publishing Company, New York, 1915. Pages 1-22.

*Fisher, Elizabeth F.: *Resources and Industries of the United States*. Ginn & Co., 1919. Pages 142-154.

*McMurry, Charles A.: *Type Studies From the Geography of the United States*. The Macmillan Company, New York, 1917. Pages 63-80.

Martin, Edward A.: *The Story of a Piece of Coal*. D. Appleton & Co., New York, 1908. Pages 84-101.

*Rocheleau, W. F.: *Great American Industries*. First Book. Minerals. A. Flanagan Co., Chicago, 1902. Pages 7-44.

Smith, J. Russell: *Commerce and Industry*. Henry Holt & Co., New York, 1916. Pages 153-167.

*Tappan, Eva M.: *Diggers in the Earth*. Houghton, Mifflin Co., Boston, 1916. Pages 1-10.

Van Hise, Charles R.: *The Conservation of Natural Resources*. The Macmillan Company, New York, 1921. Pages 17-35.

Any school geography also contains pictures, maps, and descriptions of coal mining.

VI. IRON IN INDUSTRIAL LIFE

IRON

Iron vessels cross the ocean,
Iron engines give them motion ;
Iron needles northward veering,
Iron tillers vessels steering ;
Iron pipe our gas delivers,
Iron bridges span our rivers ;
Iron pens are used for writing,
Iron ink our thoughts inditing ;
Iron stoves for cooking victuals,
Iron ovens, pots, and kettles ;
Iron horses draw our loads,
Iron rails compose our roads ;
Iron anchors hold in sands,
Iron bolts, and rods, and bands ;
Iron houses, iron walls,
Iron cannon, iron balls ;
Iron axes, knives and chains,
Iron augers, saws and planes ;
Iron globules in our blood,
Iron particles in food ;
Iron lightning-rods on spires,
Iron telegraphic wires ;
Iron hammers, nails and screws—
Iron everything we use.¹

Iron! How commonplace it is! We are surrounded by it on every hand. We who have grown up in the iron and machine age feel toward iron much as we feel toward the lakes and clouds. It is just there. Iron? Why, of course, we must have it to live by ; we couldn't possibly get along without it.

EXERCISE

Imagine yourself with several others starting out on a trip through great unexplored forests and wild prairie lands like those of South America and some parts of Africa and Asia. The trip is going to last several months and you may stay so long that you will need a log cabin ; very likely you will need to plant crops in order to raise food for yourself for months and perhaps for

¹ Used by permission of Educational Publishing Company, Boston, New York, and Chicago Publishers.

several years even. What are some of the things you would take with you? Make a list of all the tools, farming implements, utensils, and weapons you think you would need. In doing so, think of the things that would be necessary in order to build a house. Think what a calamity would befall your party if you should have failed to bring any or much

(See if you can fill in the blanks.) with which to fell the tree from which the cabin is made or if you should lose one of these tools after you got there.

In building your cabin, how would you hold your logs together? In making furniture, how would the legs of the chairs hold together? the table top? the couch? the swinging door? the windows? Will you have plenty of nails of different sizes to fasten all these things together?

What about the needs of the members of the party who will cook the meals? What utensils must they have? List the household utensils you think they would absolutely have to have to prepare meals for you. How carefully they would treasure the big pot and _____ in which the stews and roasts would be cooked over the blazing fire!

Now what material are these tools and implements and utensils you have listed made of? Wood? Tin? Copper? Iron? Stone? Coal? Dirt? In the list you made, write opposite each item the material it is made of.

Is it any wonder that your great, great grandfather prized so much the little metal he was able to get and take with him on his pioneering trips into the wilderness of the frontier? A little piece of iron was of immense value to him. Yet you pay as little attention to a saw, or a telephone wire, or a steel beam, as to the lumber products from which your house was made. On the other hand, your great, great grandfather regarded wood much as you regard iron, just taking for granted there was any amount of it. And when the boys and girls of your generation become men and women, you will feel about wood much as he felt about iron, for the forests are going fast and not enough care is being taken to replace them. Wood is getting scarcer and scarcer, while iron *seems* as plentiful as ever. Is iron as plentiful as it seems?

1. WHAT WOULD HAPPEN IF THE IRON MINES OF AMERICA COULD NOT BE WORKED?

To what extent does your life today depend upon iron? Make a list of the things that you do every day that depend upon iron. Let us give a few examples first. The water which runs in your house comes through iron pipes, under the streets of the city. The street car that you ride on has wheels made of iron; the brakes and frame work, the controllers and springs are of iron. It runs upon rails made from iron. The furnace that heats your house in winter is iron in many of its parts. The trains that bring your

food to town, the wagons, the automobiles, the delivery trucks and freight wagons which form such an important part of our transportation system today, could not be in existence if it were not for steel and iron.

The public buildings in our cities are all of them held together by a strong skeleton of iron beams and columns. Probably cities as we know them today could not exist without iron. In your school you have an auditorium. Is it wide or long? When you are in it some time look up at the ceiling and notice how necessary it is that great beams of iron or steel be used to hold up the roof above it. No other materials that we have now could be used for this purpose. The elevators that you ride up and down on in your schools or public buildings are made of iron. So, too, are the great bridges over wide rivers; the Brooklyn Bridge, for example, which connects Brooklyn and New York, is hundreds of feet long and all made of iron. There are bridges across the Mississippi, across the Missouri, the Ohio, the Illinois, the Hudson, made of iron. If it were not for iron, one would have to cross rivers by slow and time-wasting ferry boats.

Add other things that are made of iron to your list.

Is there any doubt in your mind about the immense importance of iron in our contemporary civilization?

2. HOW DOES LIFE IN THE CITY DEPEND UPON IRON?

We found that cities such as we have in America could not exist without an adequate transportation system and a continuous supply of coal. We found, too, that transportation depended on coal. This means that if the supply of coal stops our whole mechanical civilization is upset.

Now would this be true of iron? If our iron mines should stop running today, how soon would our daily lives be affected? Tomorrow? (Would transportation stop at once?) Next week? Next month? Or in three or four months, as with coal?

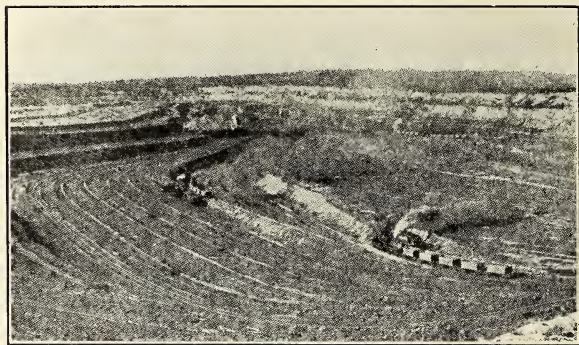
No, not for a year, or perhaps several years, would we as a whole people feel it. But very soon the railroad repair shops would be affected, for trains are continually wearing out and in need of constant repair, as are all machines and mechanical things.

What about the thousands of machine shops of the country? Could they run long without a continuous supply of iron and steel? No, for such plants keep only a very limited supply on hand; the steel mills are shipping to them all the time. Of course the steel mills with their hundreds of thousands of workers would themselves soon close down.

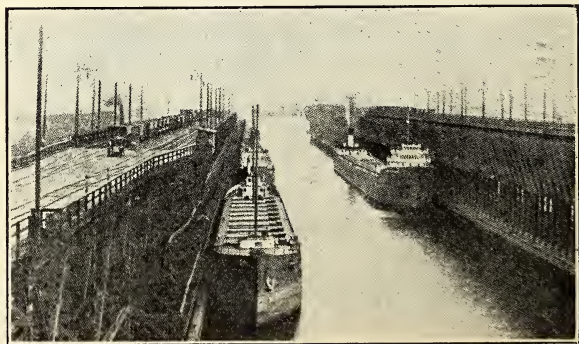
How about cities? Could new bridges be built? Could new skyscrapers be put up? Could old ones be replaced? Could tunnels be dug, subways, elevated trains, or street railways be constructed? Could automobiles be provided for business or pleasure?

Prepare a list of the different ways in which your own personal life would be affected if our iron supply should give out.

HOW IRON IS MINED AND STEEL IS MANUFACTURED

FIG. 43 ¹

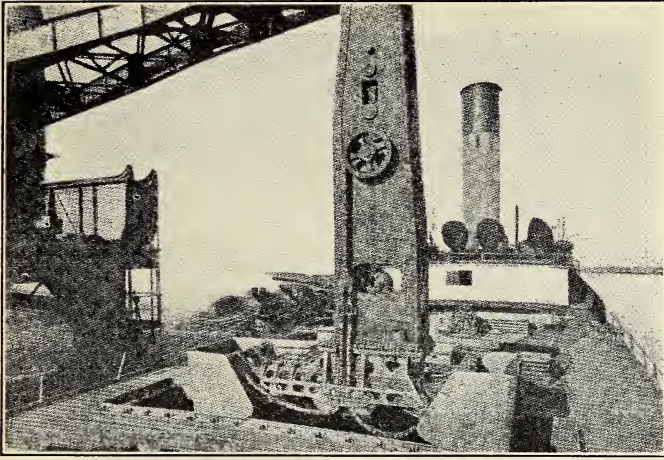
The making of the steel in your bridges, buildings, locomotives and machines begins here. These are steam shovels scooping up iron ore (Did you think it was dirt?—Valuable dirt!) in the Lake Superior iron mining region. (Find this iron region on an economic map in your geography.) For a few cents a ton the shovels load it on to the cars. Men do not handle it, lifting is done by machinery. The ore is carried to the wharves at Duluth, Minnesota (Find Duluth on the map) and:

FIG. 44 ²

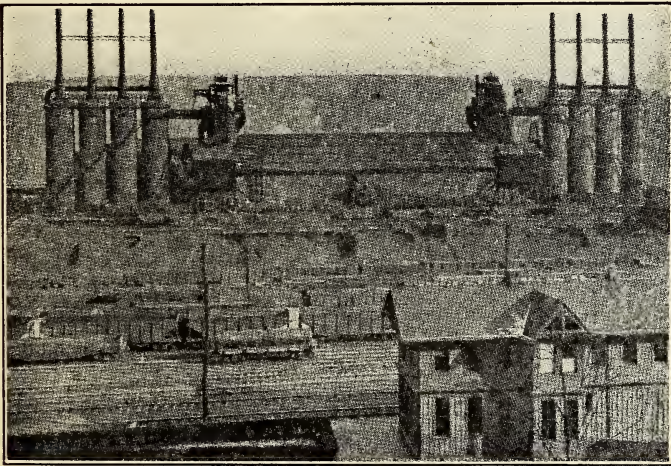
dumped into great ore boats like these. These take it down the Great Lakes to the terminals near the steel mills at South Chicago, Gary, Indiana, Cleveland or Pittsburg. The lakes freeze in winter so in seven warm months the boats must ship the year's supply. So the lake docks are generally piled high with surplus ore.

¹ From Cotter, A.: "The United States Steel Corporation." Courtesy of Doubleday Page & Company.

² Cotter, A: Ibid. Doubleday Page & Co.

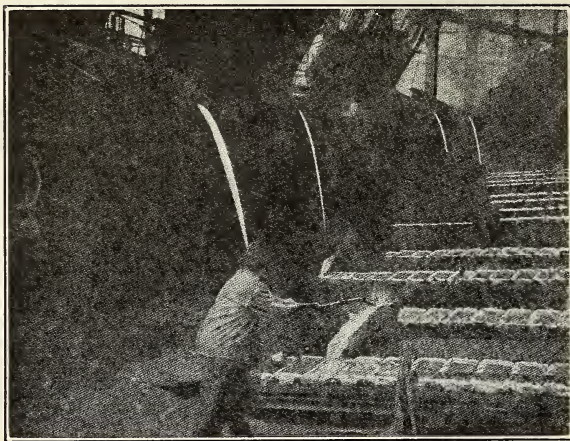
FIG. 45¹

At the terminals it is taken from the boat, loaded into freight cars by more giant machinery, more saving in lifting impossibly heavy materials. Man does not handle the ore directly from the time it is scooped up at the mines until it is dumped into the blast furnace at the steel mill. Unloading by these machines costs less per ton than it costs you to mail a letter.

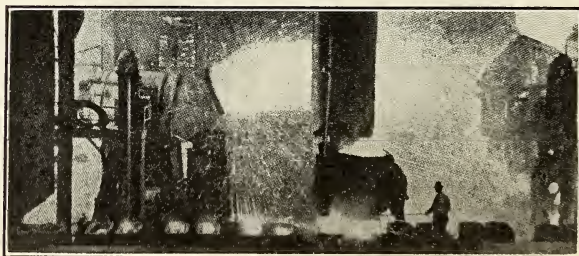
FIG. 46²

The ore is brought to steel mills like these, the blazing flames from which you can see for miles at night. The ore is taken above the blast furnace on cars, the bottoms of which open, letting the ore drop into bins. These too open at the bottom into little boxes which measure the right amount of ore and from these it is dropped into the mouth of the great furnace. Here the ore is heated to an intense heat, and the impurities

¹, ², Cotter, A.: Ibid

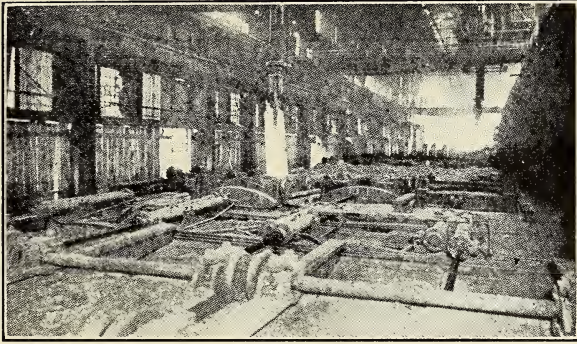
FIG. 47 ¹

are drawn off leaving molten "pig" iron to be poured into little moulds like these in which it travels on endless chains to vats where it is cooled in water. There it is lifted by machinery and carried away to the mill where the crude "pig" iron is made into steel products. The chief difference between cast iron, wrought iron and steel is in the hardness and toughness caused by the amount of carbon mixed with the iron.

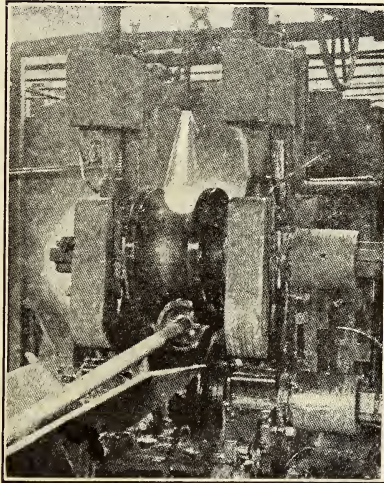
FIG. 48 ²

The crude iron, 20 tons at a time, is turned into steel in great "Bessemer" converters like that at the left where a terrific blast of air is driven through the molten iron by the force of an engine. The converters are swung as easily by electric "cranes" (moving machines) as you swing a rope. They pour the purified molten steel into moulds standing in a little train; this conveys it to the hydraulic machine which draws the mold from the red hot "ingot" of steel.

¹, ², Cotter, A.: Ibid

FIG. 49¹

The ingot, perhaps 7000 pounds, is shown travelling by machinery to the rolling mill where it is to be run between sets of rollers, still hot. There it will be shaped under great machine pressure into rails for your trains to ride over, a beam for the floor of a great city building or a new highway bridge, or perhaps even into wire fence or small steel manufactured goods.

FIG. 50²

Here is one example of the last stage of the various ones from iron ore to manufactured goods, the making of a steel tube. Notice how everything is done by machinery, and how everything is massive. We speak always of tons, rarely of pounds, in the steel business.

¹, ², Cotter, A.: Ibid

READINGS: HOW IRON IS MINED AND STEEL MANUFACTURED

EXERCISE

Look up at least one of the topics in the following list and report on it to the class. They all have to do with steel-making.

- | | |
|---------------------------------------|---|
| 1. The blast furnace | 6. Iron ore—where it comes from |
| 2. The process of puddling | 7. How iron ore is transported to the mills |
| 3. The Bessemer process | 8. Steel—how it is made by machines |
| 4. The by-products oven | |
| 5. Coke—what it is and how it is made | |

Here is a list of books that contain information on these topics. If they are not in your school library, you may find the ones you want in the public library of your town.

Allen, Nellie B.: *United States*. Ginn & Co., Boston, 1910. Pages 166-183.

Carpenter, Frank G. *How the World is Housed*. American Book Company, New York, 1915. Pages 142-172.

Chase, A. and Clow, E.: *Stories of Industry*. Educational Publishing Co., New York, 1915. Vol. I, pages 63-98.

Rocheleau, W. F.: *Great American Industries*. First Book—Minerals. A. Flanagan Co., Chicago, 1902. Pages 75-112.

Smith, J. Russell: *The Story of Iron and Steel*. D. Appleton & Co., New York, 1920.

Tappan, Eva M.: *Diggers in the Earth*. Houghton, Mifflin Co., Boston, 1916. Pages 57-64.

Look through your geography also for pictures of iron and steel manufacturing.

To the Teachers We suggest that you spend one or two class hours on reports on these topics. If it is possible to take an excursion through an iron mine or steel works, it would be highly desirable to do so.

3. WHERE IS THE IRON OF THE WORLD PRODUCED?

If iron is so important in this industrial age of ours, two questions ought to be answered: (1) Which are the peoples who are fortunate enough to have it? (2) Which of the nations using it to a large extent are industrial nations?

What do you learn from a study of Fig. 51? From it make a list of the countries in which you would expect to find the great mechanical industries of the world.

Now turn to page 91 in Part II. From Fig. 33 make a list of the countries which produce the largest share of the world's iron. Which ones use the largest share?



What are the differences in the two lists you have made, the one from Fig. 51 and the other from Fig. 33 of Part II. Why should there be any differences?

What do both lists show you about the rank of the United States in the production and use of iron and steel? Is your country one of the great "industrial" countries of the world?

Are there countries which at present do not use much iron but may do so in the future? Which ones especially? Can you account for this?

4. WHERE ARE THE IRON DEPOSITS OF THE UNITED STATES?

Turn to the economic maps of the United States in your geography. In what states do you find the deposits of iron?

Fig. 38, page 63, shows where the iron and steel factories are located. How do the iron deposit states compare with the iron and steel factory states? What decided differences are there in the locations? Which states are both deposit and factory states?

5. WHY ARE THE IRON AND STEEL INDUSTRIES SO FAR FROM THE BEST IRON MINES?

The best iron mines in the United States are in the Lake Superior region. This is about 400 miles from the steel plants near

How many? Chicago and about 900
Where are the nearest ones? Pittsburg How many?
miles from the great steel mills in the Pittsburg region.

(Fill in the greatest steel manufacturing center.)

Why should this be? Why shouldn't the mills be located right at the mines, or at least near-by?

A. WHAT HAS THE LOCATION OF THE MARKET FOR STEEL GOODS TO DO WITH THE LOCATION OF STEEL MILLS?

There are two reasons why the steel markets and the steel mills are not in the same places. One has to do with the ease of shipping the finished steel rails, beams, and other manufactured products. Turn back to Fig. 20 which shows where the industrial zone is. In what section of the country are the largest number of people who would be buying and using iron and steel goods concentrated? Where are the factories, machine shops, textile mills, and manufacturing plants of various sorts located? Are they in Minnesota near the iron "range"? Or are they scattered from Chicago to New England along through Illinois, Indiana, Ohio, Pennsylvania, New York, New Jersey, and Massachusetts?

Do you see one important reason now why the iron and steel industries are located where they are?

B. WHAT HAS THE LOCATION OF COAL MINES TO DO WITH THE LOCATION OF STEEL INDUSTRIES?

Point on the wall map to the location of our coal mines. Now point to the location of the iron and steel factories.

Do you see a second reason why the iron and steel industries are located where they are?

There may be other reasons why the steel industry grew up where it did. See how many you can list on the blackboard.

Make a summary in your notebook of all the reasons you can think of.

Proximity to markets
" fuel
Transportation facilities
Labor supply
Power
Proximity to raw materials

VII. HOW THE CITY GETS ITS WATER

1. OUR DEPENDENCE UPON PURE WATER AND PLenty OF IT

"We had been six hours on the road from New York to the heart of the Catskills. The younger members of the party had been clamoring for food every mile since leaving Kingston. We stopped by the side of one of the crystal mountain streams and the lunch was spread on a shaded mossy mound.

"In the midst of our meal one of the Catskill 'yellow fellows' who guard the water system came along, and, on urgent invitation, joined us. He told us that he had been up to the reservoir to see some campers who didn't understand [about the regulations].

"It's a busy job; but there's satisfaction in it," he said. "Take these people I've just been to see. They're New Yorkers when they're home. This very water which they were polluting and poisoning with banana skins, chicken bones, and lunch boxes is the water which they expect to have delivered in their homes pure and clean. Why, they even pay us fellows for seeing to it and actually protecting them against their own acts; . . . and they never thought of that until I reasoned it out with them. . . . we fellows have been working at this twelve years, you know. The longer we stay the easier it is, because we make it a point to turn every thoughtless trespasser into an agent to help us keep things in shape.

"It was lonesome the first years, but now I can't go back. I know every shaft, every stream, and every pleasant camping place in my territory, and my job is here. It's some job, too, isn't it? It scares me when I think of the millions of folks down there who would be sick if things were not right up at this end.

"Well, so long. Going through or going back tonight? Maybe I'll see you on the return trip. Tell the fellow at Lexington you saw me south of the Cut."

"As his tannish-colored figure went swinging down the road I heard one juvenile New Yorker say to the other, "What d'ye know about that? A regular city cop away up here in the mountains! Come on, let's pick up." and I said to myself, "What a teacher and what results!"¹

"Mother, the water is terribly dirty. We can't drink this water," exclaimed Helen Watson as she filled the water pitcher for supper.

"Let it run awhile and see if it doesn't clear up," replied her mother.

¹"The Outlook," vol. 123, page 182, Oct. 1, 1919.

The Watsons lived in Urbana, Illinois where the water came from wells owned by a private water company.

"No, it is still a dirty brown and I have let it run fully three minutes" said Helen after a time, "What is the matter with it?"

"That's easy to answer," broke in brother Tom who had entered the house in time to hear his sister's question. That's easy to answer. There's a bad fire down town. Lewis's store is burned to the ground, it's burning yet, and they need so much water down there that they can't stop to run it through the filter. You know, mother, the firemen are about helpless in this town. The wells aren't big enough nor the pumps strong enough to handle a fire such as this one. Jack Donnelly, one of the firemen, told me that they would have put the fire out easily if they could have gotten any pressure on the water main. That stream after 30 minutes was about the size and force of our garden hose. With a good wind the whole town would go up in smoke. Why don't they *do something* to protect us against fire?"

TYPHOID FEVER EPIDEMIC BREAKS OUT, FIFTY CASES REPORTED YESTERDAY IMPURE WATER THOUGHT TO BE THE CAUSE

Sterling, Conn., October 17, 1922—Sterling faces a serious epidemic of typhoid fever. Fifty cases have been reported to the Board of Health in the last three days. Most of the cases appear to be in West Sterling. Investigations of Agent Houghton show that the water supply of

West Sterling residents is the Asburnham Reservoir. Experts in water analysis from the State Board of Health have been sent for and are now examining the water of this reservoir for traces of typhoid germs. . . .

PIONEERS SETTLED NEAR WATER SUPPLY

The early colonists in New England, New York, and Virginia always located their settlements near an abundant water supply. For example, when the Pilgrims reached America Captain Miles Standish was made head of an exploring party to locate a suitable place on which to build a town. According to journals of the Plymouth Colony, Captain Standish and his party after several days of explorations "marched into ye land and found divers cornfields and little running brooks, a place fit for situation."

"The Dutch found Manhattan a well-watered island, traversed by many brooks abounding in fish; with a large fresh-water pond, known as the 'Collect,' fed by numerous springs. The lower part of the island was underlaid with sand which readily yielded fresh water a few feet above sea level. . . .

"The population of the island by 1664 was but 1500, and water was obtained from private wells, although by 1658 a public well was dug near Bowling Green. . . . Very soon, however, as the town grew, the wells became contaminated and the supply of water insufficient. Those who could afford it sent for water from distant wells. One well in particular, known as the 'Tea-water Pump,' was particularly noted; so that its neighborhood became so congested with water-carts that the spout of the pump was raised and lengthened to permit pedestrians to pass under it."¹

Where did the western pioneer clear his tract of land and build his home; What determined his location; *Nearness to water*—drinking water for himself and family, and for his cattle. If he planned carefully he located his home below his spring or well. Why? To prevent that water from being contaminated. At first he had to carry the water to the house from the spring or brook. Later when the work of building a home and of getting the land cleared and planted was done, he had time to devise means of getting his water to his cabin more easily. A rude pipe, hollowed logs perhaps, was used to bring the water to his door, even into the cabin. In later years a well was driven deep into the ground, and the water was pumped up into a tank by a windmill, from which it was piped into the house.

Do you live in the city? Do you know where the water that you drink and use in your house comes from? Several times a day no doubt you go to the faucet in the kitchen or in the bathroom to get a nice drink of cool water. Have you any idea of the complicated arrangements that lie behind that easy turning on of the faucet in your home? Even the poorest of our people in American cities today have water at their ready command. This is probably one of the greatest achievements of this remarkable industrial world of ours. Without water systems as efficient as those of today are, could cities like ours exist? Let us study the matter.

How dependent on water are human beings? Do you know how long a person can go without water? How long can cattle? Horses? Other animals? Can they go as long without water as without food? Have you ever been on a long hike lasting most of a day in which you have had to go without a drink? If so, do you remember how parched and dry your mouth and throat became after three or four hours, and what great relief came when you were able to get that first cool drink? Imagine what it would be if you had to go all day and then all that night without water! Before the first day had passed you would feel real distress. During the next day you would search and search for water, doubtless becoming more and more tired

¹ White, Lazarus: "The Catskill Water Supply of New York City," John Wiley & Sons, Inc., New York, 1913. Page 1.

and more and more thirsty. Imagine what it would be to be lost in the woods as so many frontier people were! Or on a great plain, or sandy desert, and be unable to find water! After the second day you would probably be so tired you couldn't walk. And then, unless someone with water chanced along, your strength would continue to give out until finally you would die.

2. DO PEOPLE LIVE IN REGIONS OF LITTLE WATER?

Turn to Fig. 3, page 9 of Part II, which shows where people are living in the different regions of the world. Do you find the white areas on the map where the Sahara Desert and the Arabian Desert are? Notice how that whole region is nearly as large as the United States. Yet there are almost no people there and we have 106,000,000! In the Southern part of Arabia there are more than 300,000 square miles of absolute desert which people have never known much about and which is probably entirely uninhabited. This area as large as Germany and Italy combined has almost no people. Germany and Italy today have a population of about 100,000,000.

The great Sahara Desert to which we referred probably has fewer people than the Arabian Desert. Another great desert, the one that has the smallest number of inhabitants of any of the dry deserts, is in Australia.

In our own country Nevada is a desert state. Here there is an average of less than one person to a square mile. But in occasional fertile places people are gathered close together. We call those scattered places in deserts where there is water and a little vegetation *oases*. Contrast the population in Nevada with that of one of the New England states like Massachusetts, which has more than 450 persons to the square mile. Seventy-five per cent of the inhabitants of a state like Massachusetts live in cities. Of course, one of the reasons for this is adequate rainfall, which not only makes it possible for people to live, but also makes it possible for them to work in factories and great manufacturing plants.

The deserts to which we have referred have been hot and dry ones. Perhaps you will be even more interested to find that there are "cold" deserts that have as few people living on them as the hot ones. The northern provinces of Canada are good illustrations. Locate them on the population map, page 9 of Part II. These northern provinces, not including the Labrador Coast and the Yukon mining region in the northwest, have an area of 2 million square miles. How many people do you think live there? Only 20,000. Compare the area of these northern Canadian provinces with that of Europe. If we exclude Russia, Europe is no larger than the Canadian provinces, yet it has 16,500 inhabitants to every one inhabitant in the provinces.

Another illustration is the Antarctic region. So far as we know, it has not a single inhabitant.

Now turn to a rainfall map in your geography. The rainfall of a region is measured by the number of inches (deep) of water that falls in that region in a year. Point out the areas on the wall map that have less than 10 inches of rainfall a year. How do these regions agree with the regions your population map shows to have few people? Now point out on the wall map the regions that have a moderate amount of rainfall, say 40 to 80 inches? Compare these with the regions where population has become dense. Is there any relation between amount of rainfall and density of population? What is the relation?

Is it just in the places of least rainfall that there are few people living? What about regions where the rainfall is more than 80 inches each year? Are there people in these regions?

As a result of your study, see if you can make a statement in which you tell what seems to be the most desirable amount of rainfall for the comfort of people in general.

3. HOW MUCH WATER IS USED IN CITIES?

Have you any idea how much water you use in different ways each day? You probably will not want to believe it when we tell you that if you live in a city, especially a large city, you as an average citizen probably use from 50 to 75 gallons of water a day. If you live in a small town, very likely you use only from 15 to 30 gallons a day, and if you live in a little village, which has no public water supply, you probably use only a few gallons a day.

How can this enormous use of water in a city be possible, you ask? What is it used for? Well, of course it is not all used for drinking, for even if you drink a great deal of water, you probably do not consume each day more than two or three quarts. So the large use of water is not accounted for in that way. It can not be just for washing either, for that would not take on the average more than several gallons per day per person. No, the large uses, aside from the huge waste which is quite common in our city water supplies, is for purposes like manufacturing, watering the streets and lawns in the summer time, and defending the city against fires. Now, the American cities are very wasteful indeed of their water. In the first place we waste a great deal in our houses, perhaps because it comes to us so easily. If we had to carry all the water we use in buckets from a spring or well, we would be more careful. What ever comes easily tends to go easily. Then, too, in the big water mains of our city systems and in the pipes in the houses there is a good deal of waste by leakage. Probably the greatest use of water comes in the large manufacturing plants of our towns and cities. Did you ever notice how the factories of a community are generally spread out along the banks of a stream? They are located in this fashion in order to have

water supply close at hand. That is one reason of course why in New England and the hilly eastern part of the United States there are so many more factories than in the Middle West.

4. WHERE DO CITIES GET THEIR WATER?

(a) MOST OF OUR RAINFALL COMES FROM THE OCEANS.

The water upon which our lives depend from day to day comes, of course, from rainfall. But where does the rainfall come from? It comes, doesn't it, from clouds of tiny drops which have been formed from the cooling water-vapors in the air. Does the vapor come from our rivers and lakes? Students of this matter tell us that it does not. They tell us that the rainfall that waters the broad wheat fields of Kansas, Nebraska, Iowa, the Dakotas, Illinois, and Indiana is blown there in clouds from the oceans 1000 to 2000 miles away. They tell us that if you put all the rivers and lakes in the United States together the area would be only one or two hundredths as great as the area of the oceans. This area is two and a half times as great as that of all the lands. "If all the lakes *in the world* should be evaporated, they would supply only one-fifteenth of the rain that falls each year on the lands." So you see, we get our rainfall largely from the oceans.

If our crops depended only on the moisture which was evaporated from the land and the lakes and the rivers, we would starve. Crops would fail because the rainfall would soon cease, and all of the continents would dry up and become deserts. That would mean of course that human beings and animals and vegetation would disappear from the face of the earth.

(b) CITIES IN HILLY REGIONS GET THEIR WATER FROM STORAGE RESERVOIRS HIGH UP IN THE HILLS

If you have ever had drives or hikes outside of the cities in hilly country like New England or in the Appalachian region, you have no doubt come upon reservoirs of water built with great embankments or dams? Have you ever noticed that these reservoirs are always up in the hills and that every time there is a town or city near-by? Did you ever encounter such a reservoir on the plains of Illinois, or Iowa, or Kansas with streams of clear water running down from it over white, sandy channels, as is so frequently true in Massachusetts and New York? No, instead of that, near each little town or city you find great iron standpipes. These standpipes or tanks, standing 50 to 100 feet in the air, are frequently the first sign to a traveller on the plains that a community is near-by. They hold the water supply, at least the emergency supply, of the town.

But people who live in hilly regions conserve the rainfall in reservoirs. They use the natural little lakes that form in the hollows of the hills. They connect these with channels or with large steel pipes or "flumes." The water

flows down gradually into distributing reservoirs, from where it is sent out over the town or city through large underground pipes.

Do you know why these reservoirs are always placed higher up than the cities? They are so placed because of a most important principle which men have learned how to use: namely, the principle that water in a pipe tries to rise as high as the source it started from. For this reason people try to build their reservoirs at points higher than the tallest building in the town or city which the reservoir is to supply with water. Of course as the water flows through the big iron mains under the streets, and from these small pipes into the little pipes an inch in diameter, which lead the water to the faucets, the force of the water becomes very much decreased. So, in order to guard against danger from fire, most towns and cities provide for more water *pressure* than would come from just having the reservoir high up in the hills. Sometimes they have pumping stations which, when a fire breaks out, pumps water from reservoirs or tanks into the mains of the city. This enables the firemen to play a stream of water on the tops of the highest buildings. And in addition they sometimes have water tanks located on the tops of the highest buildings themselves as a further protection against fire. Have you ever seen these? If you watch the newspapers, you will frequently come upon accounts of very bad fires which the Fire Department has been unable to control because the water pressure was not high enough.

(c) CITIES ON THE PLAINS PUMP THEIR WATER FROM RIVERS, LAKES OR DEEP WELLS.

Look at the relief map of Fig. 21 again. Where do you think the people on the great western plains get their water? There are almost no mountains or even high hills from Ohio clear through to Nebraska and Kansas. When the rain falls on the soil and gradually runs off these level plains into the more shallow rivers, what do people do for their water supply? Of course it is difficult, if not impossible, to build reservoirs, and even if they were built, the water would not be high enough above the towns and villages so that the force of gravity would bring it up into the houses where the people want to use it. What can be done in a case like this?

In the first place, the towns are forced to use water from the rivers and lakes. One of the most important duties of the government of a town or city is to provide carefully for an adequate water supply. So in level regions it has been necessary for the officials to find some way to take the water from near-by lakes, ponds, and rivers. Since the water is not higher than the city, it must be pumped into pipes with sufficient force, or pressure, so that it can be drawn even to the tallest buildings. When you turn on the water, do you notice with how much force it generally comes out? Sometimes, when the pressure is low, it just barely flows perhaps. That means either that the pumps are not working well or that some other part of the town is using an unusually large supply of water. A great fire will, of course, reduce the pressure because of the huge streams of water running out of the hydrants at the same time.

So in level regions, city governments have to collect taxes from the property-owners to build water tanks, pumping stations, to buy boilers, engines, and pumps, and to lay the pipes through the city. In hilly country the community raises the money for dams and reservoirs, for cleaning the site and keeping the water clean, for building channels and great pipes with which to take the water down to the community.

But there are many communities in America which cannot depend upon streams and lakes for their water supply. What can *they* do? They have to resort to digging wells just as farmers do now out in the country. Does it surprise you to hear that a city may get its water from wells? Do you think this means that each house and apartment building has its own well? No, the water comes to the buildings through large *mains* under the streets, just as in the case of the other communities we have studied about. But instead of coming from streams it comes from *wells* drilled hundreds of feet below the surface of the ground. This is done by driving down large steel pipes until water is struck. Then if there is pressure behind the water, as there frequently is, the water comes up the pipe and is stored in tanks from where it is pumped through the pipes of the city. When there is no pressure to force up the water, however, it has to be pumped out of the pipes.

5. THE GROWTH OF A CITY DEPENDS ON WATER SUPPLY

You have learned that a city cannot grow very large without having good ways of transporting its people and their goods, and of communicating easily. But, it is clear to you, isn't it, that even more essential than transportation and communication is a water supply that is both plentiful and cheap. Now our water engineers have learned how to construct water systems for small towns and cities so that it is an easy matter. But when a city tends to grow larger and larger, the difficulties of getting good water increase and the problem becomes a very serious one.

Think of how such cities as Chicago, New York, Boston, and Los Angeles get their water! Chicago takes hers out of Lake Michigan by digging a great tunnel, many feet in diameter, under the lake and pumping the water through the pipes of the city from a pumping station three miles out from the shore. Chicago's trouble lay not in getting *enough* water, but in getting *pure* water. Formerly the sewage of the city was emptied into Lake Michigan. That has been corrected now, however, by a drainage canal, which connects the Lake with the Illinois River, and the sewage is carried off by the water in the canal. But even so, Chicago takes its water from a distance of three miles in the lake. To be sure it is fit for drinking it is run through a filtration process.

NEW YORK'S WATER SYSTEM.

Chicago, then, gets its water right at the border of the city. New York, on the other hand, is forced to go 70 miles up into the Catskill Moun-

tains, to build tremendous storage reservoirs and huge aqueducts, and to bring its water all that distance to the city.

Study the relief map in your geography which shows the lay of the land around New York. Do you see how many cities surround New York City, each of which has to have its supply? Once the territory which New York could draw on for its water was hemmed in by these surrounding communities, the great city had to go farther and farther out into the open country, and pipe its water from a long distance. Otherwise it could not continue to grow, for without sufficient water people cannot live.

During most of the 1700's the people of New York City depended on their private wells, but in 1799 a private water company—The Manhattan Waterworks Company—was formed, and they soon piped water directly to the houses of the people. Would you believe that they actually used wooden pipes! You see that was before people had learned to make iron pipes cheaply, as we make them now. In the early 1800's this company furnished water to 2000 families and owned over 2500 miles of wooden pipe.

But the city grew and grew so that when, by 1840, it had 400,000 people there was not enough water. This time the engineers went way out 40 miles to Croton and piped the water from the reservoir there to a smaller reservoir in Central Park. From there it was piped to another smaller one—the Murray Hill Reservoir. This was located in the square where the New York Public Library now stands, at 42nd street and Fifth Avenue, the heart of the great city. The water is brought to the city by an enormous aqueduct with tunnels that are about a dozen feet in diameter, and it is then carried across the Harlem River on a great bridge called High Bridge.

But by 1900 the population of the city had reached 3,500,000; and again there was a shortage of water. This time the city government went still farther away to the Catskill Mountains and built additional reservoirs. These new reservoirs were constructed on even a greater scale than the Croton Reservoir. The difficulties in building them were very great indeed. All of the large rivers and lakes in the region were cleaned up and a huge dam, the Ashokan Dam, was built. The territory covers an area 12 miles long and 3 miles wide, and the reservoir itself stretches over 10,000 acres. The greatest difficulty they had in getting water from the Ashokan Reservoir to New York was in getting it across the Hudson River. This was accomplished by boring a tunnel 1100 feet under the river. Now, the water is forced through this tunnel and carried to the Croton reservoir; thence to the city. The Ashokan Dam is nearly 600 feet above sea level, so that there is no expense for pumping the water; it flows by its own force down to the city.

BOSTON'S WATER SYSTEM.

In a similar way Boston reached out farther and farther for water. First, Cochituate Lake near the city was made into a reservoir. Then reservoirs to store the waters of the Mystic River and the Sudbury Rivers were built. By about 1900 it became apparent that these reservoirs would be insufficient; so the city of Boston went out 35 miles, into the valley of the Nashua River near Clinton, Mass., and bought thousands of acres of land.

Then occurred an interesting engineering feat, which is important as an illustration of what great cities have to do to get water for their people. They moved a whole town! On the land that Boston desired for its new reservoir there was a prosperous farming community, called West Boylston. The city's commission had the farms of this community condemned by an ancient rule of law, which says that any property can be taken for *public use* provided the owners are paid its value. So Boston bought these farms and buildings from the people who made up West Boylston. Even a railroad had to be moved,—The Massachusetts Central Railroad, which followed the river up through the valley.

Then began the work of building an enormous reservoir. A great dam, a quarter of a mile long, two hundred feet thick, and over one hundred feet high was built across the valley. The railroad company then proceeded to bore a tunnel twelve hundred feet long through one of the hills; and built a bridge just below the dam so that now trains go straight across the valley where once they wound around it to Worcester.

In the course of a few years the river backed up for several miles behind the dam, and the great Wachusett Reservoir—for that was the name they gave it—was ready to supply Boston with water. It is thirty-nine miles in circumference.

Even then, however, tunnels and channels of pure white sand had to be built from Clinton to Boston—thirty-five miles. The first three miles of this tunnel went through great hills; part of the way they had to bore through solid rock. This is a good illustration of the expense and labor that human beings are willing to go to in order to continue to live in cities.

TAKE AN EXCURSION TO THE WATER WORKS
OF YOUR TOWN

You will understand best how a community provides itself with water if you will take an excursion to the water plant of your own city. Before going, you should have clearly in mind what it is you are going to study. Remember that you want to find out the answers to such questions as these:

1. Where does our water come from, deep wells? the river? lakes, ponds nearby? or storage reservoirs in the hills?
2. If it has to be pumped, how do the engines and pumps work?

3. Where is the water stored? Is it pumped directly into the mains of the city or does it go into small reservoirs? What are they made of? How long will the supply that they hold last?

4. How is the water made pure for drinking? Do they let it run over white sand? How does the sand clean it? Do they put any chemicals in the water, like alum? What for?

The day following your excursion the teacher will let you discuss what you saw. Be ready to tell how your community gets its water and how it makes sure that it is pure enough to drink.

To the Teacher: *The Outlook*, vol. 123, page 182 has an excellent article on the New York City water supply. See also Judd, C. H. and Marshall, L. C. *Lessons in Community and National Life*, Series C., "The Water Supply of a Town or City," page 25.

VIII. HOW THE CITY GETS ITS FOOD

EXERCISE

A. WHERE IS WHEAT RAISED AND FLOUR MILLED?

1. On a blank map of the United States fill in with diagonal lines the regions of the country where wheat is raised. You will be able to get the information you need for this purpose either from maps in your geography or from facts given in the reading matter. Fig. 1, page 5 of Part II, will also help you.

2. After you have done this, locate the flour-milling industries on the same map by filling the regions in with solid black.

3. Now write a few sentences in your notebook, perhaps five or six, telling where wheat is raised, where flour is milled, and how nearly the regions in which these two regions are located correspond. Are they the same regions? Are they all different? Or are they the same in some cases? Tell also, as you did in the section on iron, the reasons that they are located where they are.

B. WHERE ARE CATTLE RAISED AND MEAT PACKED?

1. Following the directions for wheat and flour industries, make a similar map showing where in the United States cattle are raised and where meat is packed.

2. Compare the two regions and write five sentences in your notebook answering the questions for cattle and meat-packing than you answered about wheat-raising and flour-milling.

C. THE STORY OF WHEAT.

1. Collect all the pictures you can on the wheat-raising and flour-you can piece out the whole story of wheat from the time it is planted in the milling industries from geographies, magazines, picture books, advertisements, etc. Bring them to the class, and with your class-mates see if together ground until it is made into flour and purchased at the grocery store.

2. Make a list of all the machines, including farm machines and transportation vehicles, and all the kinds of workers that are brought into this long process.

D. THE STORY OF CATTLE.

1. In the same way that you made a picture story of wheat, make one for cattle and meat-packing.
2. Make a list of all the machines and all the kinds of workers that enter into the process of the cattle industry from the time that cattle leave the farm until they get to the meat market for retail selling.

To the Teacher: We suggest next a list of books suitable for the reading of junior high school pupils. From these additional readings on *How The City Gets Its Food* can be assigned as supplementary readings.

Allen, Nellie B.: *United States*. Ginn and Co., New York 1910. Chapters 7, 8, and 9.

Bengston, N. A. and Griffith, Done: *The Wheat Industry*. The MacMillan Company, New York, 1915. Chapter 3-10.

Carpenter, Frank G.: *How the World Is Fed*. American Book Company, New York, 1907. Chapter 2-5, 9-11, 24-26, 29, 35, 36, 40, 41, 45, and 46.

Chamberlain, James F.: *How We Are Fed*. The MacMillan Company, New York, 1917. Pages 7-40, 77-87, 104-113, 146-165.

Chase, A. and Clow, E.: *Stories of Industry*. Educational Publishing Company, Boston, 1916. Vol. II., pages 115-149. 199-223.

Crissey, Forest: *The Story of Foods*. Rand, McNally and Company, Chicago, 1917. Entire book, particularly chapters 1, 2, 3, 31, and 32.

Fisher, Elizabeth F.: *Resources and Industries of the United States*. Ginn and Company, New York, 1919. Chapter 3.

Lane, M. A. L.: *Industries of Today*. Ginn and Company, New York, 1904, pages 119-127.

Mowry, W. A. and Mowry, A. M.: *American Inventions and Investors*. Silver, Burdett and Company, New York, 1900, pages 99-142.

Smith, J. Russell: *The World's Food Resources*. Henry Holt and Company, New York, 1919. Chapters 1, 2, 3, 6, 8, 15, 16, 21, 22, 23, and 25.

IX. A PICTURE STORY OF COTTON.

You have studied now the important facts about the resources and industries upon which our daily lives depend most closely. There is still another industry that occupies the time of many people in America—one however that does not touch our lives as immediately and vitally as coal and transportation. Even if the cloth mills should shut down we would change our ways of living not at all, at least for many months. Not for a considerable time would we really feel the pinch of lack of cotton.

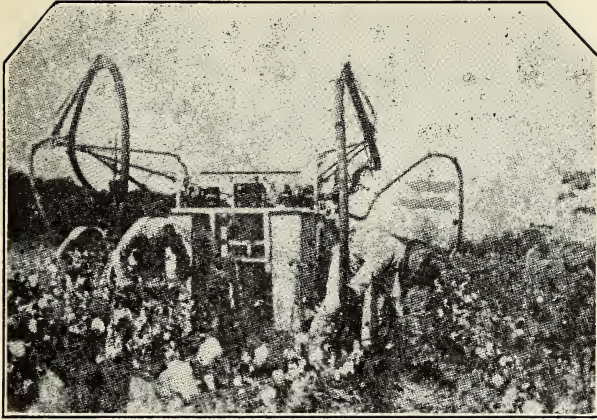
The cotton industry is most interesting to study. We have chosen it as another one with which to give you a picture story. Your teacher wants to find out how much you can learn about the whole process of cloth making from a series of pictures. Study the next pictures and read the story as told blew them straight through. Then see if you can tell the class how the cotton blossom becomes the cotton cloth from which your dress or shirt is made.



FIG. 52¹

No. 1. This is the first step in making your cotton skirt or dress, picking the cotton blossom from the plant. Each plant contains several blossoms or "balls," and until very recently they have had to be picked by hand. A very skillful picker can pick only about 150 pounds a day. Most pickers pick about 70 pounds a day. This work of picking has been one of the few things in industry that could not be done by machinery. It has retarded cotton production a great deal.

¹ From "Fabrics of Civilization," courtesy of the Guaranty Trust Co., New York City.



Courtesy of the Industrial Digest, March 18, 1922

FIG. 53.

No. 2. After a hundred years of inventing a mechanical picker has been made. The picture shows an electrical device which permits a person to gather from 400 to 700 pounds of cotton a day, as compared with 70 to 150 pounds, by hand. By so doing it promises to solve the greatest problem of the cotton grower, that of being able to harvest all his cotton in the fall before the rains and frosts damage the plants. The cotton thus picked is declared to be cleaner and fluffier, and worth \$15 more a bale than the hand picked.

This one machine increases cotton production at least 5 times.

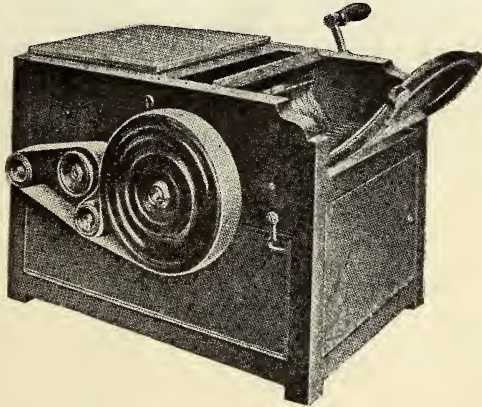
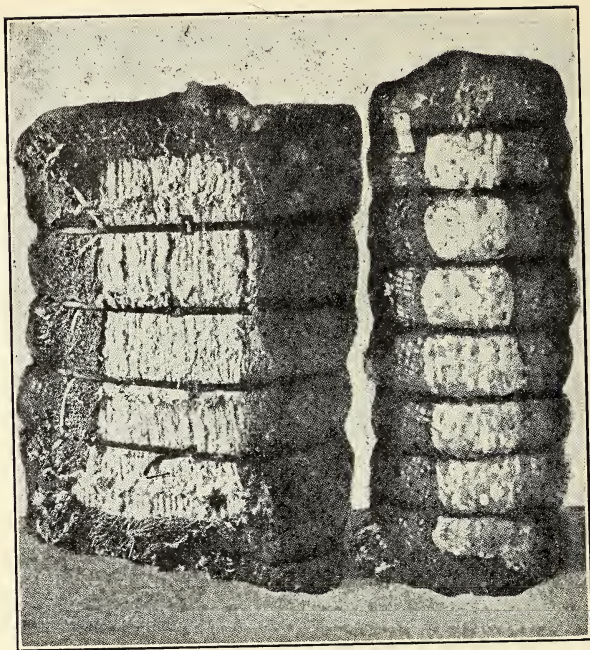


FIG. 54¹.

No. 3. When the cotton is picked is it ready for spinning? No, far from it. One of the most important things that has to be done to it is the cleaning out of the seeds. Until 1792 that had to be done by hand and was very slow and expensive work. In 1792 Eli Whitney, a young New England school teacher, invented the machine shown above, called a "cotton gin." With this little hand machine a man cleaned several times as much cotton per day as by hand. In the century since Whitney's day many improvements in ginning have come. Nowadays the cotton is driven from the field to a large gin house. The raw seed cotton is sucked from the wagons by air pressure and blown through cleaning frames which removes the seed. These are blown into wagons and hauled away. The clean lint is blown into baling presses.

¹ Guaranty Trust Co.: Ibid.

FIG. 55¹

No. 4. It comes out of the gin house baled loosely as the large bale at the left shows. It goes under great hydraulic presses and is compressed to a size as shown in the bale at the right—smaller in size but weighing the same, 500 lbs.

Pictures No. 1 to 4 complete the story of the handling of the raw cotton. Once it is baled it is ready to be shipped to cotton mills where it is spun into yarn and woven into cloth.



FIG. 56

¹ Guaranty Trust Co.: Ibid.

No. 5. The map shows where our textile mills (cotton, woolen and silk) are. Some are right near the southern cotton fields, in Georgia, and North and South Carolina. The oldest and largest are in New England—Massachusetts especially. For a hundred years cotton manufacturing has been a special industry of New England; only in the last twenty years has much cotton manufacturing been done in the south.

Do you see how close the new Georgia and Carolina mills are to the cotton district? Compare this map with Fig. 14, Part II, page 31. Isn't it astonishing that they did not build mills there long ago? The reason is that they could not obtain enough skilled laborers.

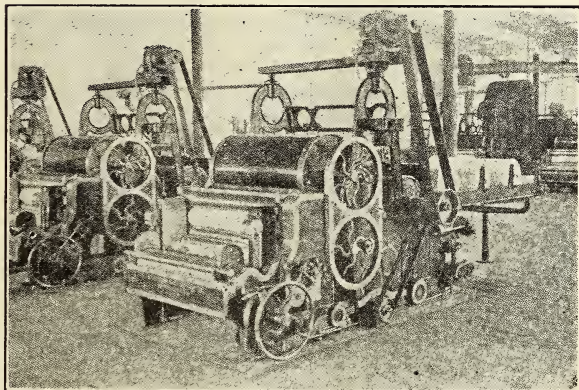


FIG. 57¹

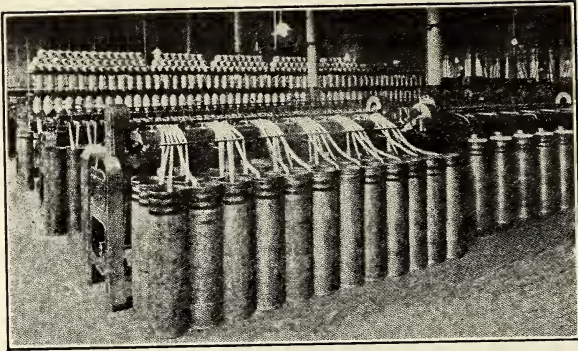
No. 6. In the mill the raw cotton goes through five different processes:

1. Preparatory processes: Opening, carding, combing, and drawing. 2. Spinning. 3. Spooling, warping, sizing, slashing, entering or drawing-in. 4. Weaving. 5. Converting and finishing, including bleaching, mercerizing, dyeing, and finishing.

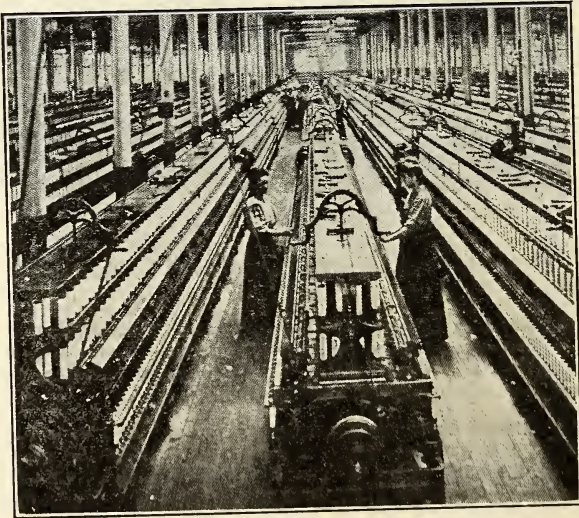
This machine (No. 6) is an opener picker. It cleans the cotton of dirt and rolls it with a fairly regular lap. Notice the rolls on the platform at the back of the machine. Over these the irregular downy mass of cotton as it comes in the bale is smoothed and drawn out into a flat lap.

The carding machine (not shown here) draws out the cotton still more, lays the fibres parallel and discards the short immature fibres. As the flat *lap* leaves the carding machine it is compressed by funnels into rope-like "slivers."

¹Guaranty Trust Co.: Ibid.

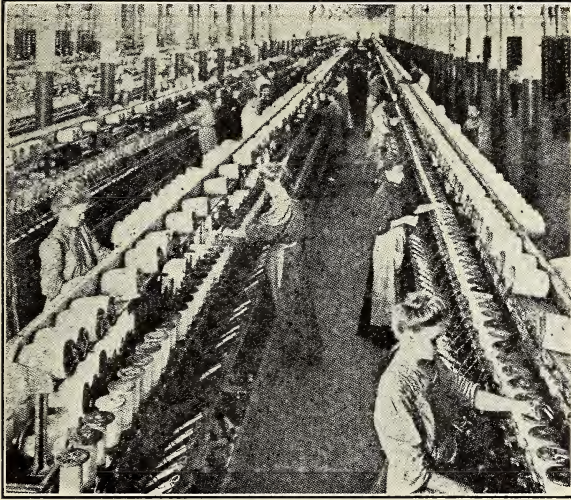
FIG. 58¹

No. 7. This shows "slivers" of cotton (they look like ropes now don't they?) running out of cans onto drawing machines. The slivers are as thick as a man's thumb as they start through the frames but gradually they lengthen out and get finer and finer as the drawing frames twist them onto spindles. Do you see the spindles on top of the frames. Spinning yarn (or thread) is a process of twisting and compressing and lengthening the cotton fibres. It is the twisting that reduces the fluffy roving to tougher, stronger and finer thread.

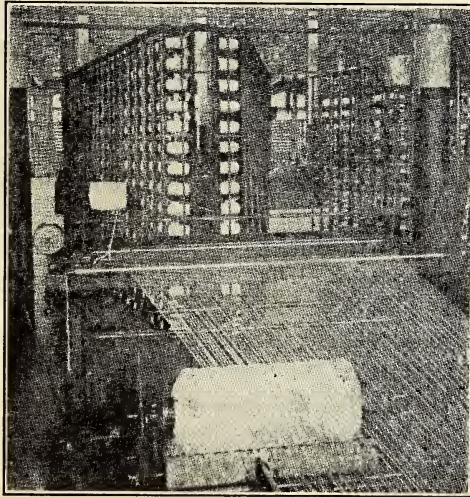
FIG. 59²

No. 8. This shows the spindles on larger frames receiving more twisting and drawing out. Do you notice in all this work how most of it is done by machinery? How few persons are required to tend the machines. This is one of the marvellous developments of the last hundred years—in all branches of industry more and more of the world's heavy labor is done by machine power.

¹, ², Guaranty Trust Co.: Ibid.

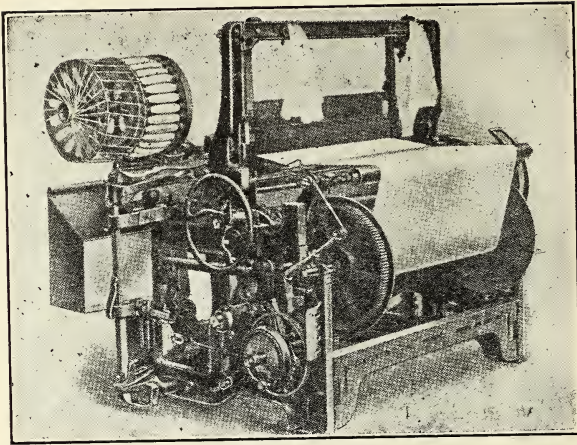
FIG. 60¹

No. 9. Once the cotton has been twisted to fine thread it has to be made ready to be put into a loom to be woven into cloth. First the yarn on the thin spindles has to be wound onto larger spools as shown here. These are then set in a tall frame called a creel.

FIG. 61²

No. 10. From the creel, shown at the back of this picture, the threads are drawn onto a large roller and laid in exact order side by side, a yard or more in width. The number of threads depends on the width that the store people want their cloth to be. Some cotton cloth sells in yard width, some 27 inches wide, others at other widths. If you can get a magnifying glass study how a piece of cotton cloth is composed. It consists of threads woven over and under each other and at right angles to each other. One set of threads consists of the warp, which is the set shown in the machine in this picture, No. 9.

¹, ², Guaranty Trust Co.: Ibid.

FIG. 62¹

No. 11. The last step in making threads into cloth is the weaving. It is done on a loom like this one. The large roller (the beam) on which the threads are shown in No. 10, is put underneath and the threads run through five wires which separate them regularly. These threads are raised and lowered alternately so that a shuttle can be driven between them by the power that runs the loom. Before 1738, when Kay invented the "flying-shuttle," the shuttle containing the bobbin of thread had to be thrown through by hand. This was very wasteful. During the past two centuries many inventions have been made so that now one weaver can operate 16 looms at once.

Once the cloth is woven it has to be "finished," and made ready for selling. This means that it has to be washed and bleached, pressed to a fine surface, sometimes mercerized, dyed, printed etc.

EXERCISE

We have given you a picture story of one of the important American industries, the cotton industry.

See if you can find out the chief facts about this industry, answering such questions as these:

1. Where are the textile factories of America?
2. Why are they where they are?
3. How many people are there engaged in the textile industry?
4. Do we export raw cotton, wool and silk?
5. Do we export cotton, woolen, and silk cloth? To whom? How much?
6. How important an industry is the textile industry in the lives of our people? If it should break down would it be as serious as if the railroads should break down? How serious would it be?

X. FROM A STUDY OF TOWNS AND CITIES TO A STUDY OF NATIONS

So far in this pamphlet you have been studying about life in our towns and cities. Do you see how complicated it has become, how industries depend upon other industries, and workers depend upon other workers, and cities depend upon farms and farms upon cities? Is it clear to you that the transportation industry has become so important that almost everything we do, our school, our work, and our play has something about it that transportation had something to do with? In the food you eat, the clothes you wear, the theatres you go to, your playgrounds, in almost everything you can think of, transportation has had some part. It has brought fruit from Florida, or cotton from Georgia, or wood from the forests, or films from California, to you wherever you are. If you live in the city, the wheat that goes into your bread, and the cattle that makes your meat, have come by train from the farm; if you live in the country, the cloth for your clothes, your shoes, your hats, your gloves have come by train from the city.

Transportation in turn depends upon coal and iron, and you have learned how important coal and iron are to other industries as well. We make our machines of iron and run them by steam-power from coal. All our factories depend upon a continuous supply of iron and coal. You know where the iron and coal mines are and where the steel mills are, and you have seen that our supply of coal is decreasing so rapidly that a hundred years from now engines and boilers and furnaces will have to rely on some other kind of fuel which we don't know about as yet. You have found out how a plentiful supply of pure water, above all things, is absolutely essential to our daily life, and how millions of dollars and years of labor have been spent to make our water supply the best possible.

Now, is it clear to you how our life and happiness and comfort is all tied up with huge industries which we have always taken for granted. Probably none of you realized before how terrible it would be if transportation all over the country should suddenly stop, or if all at once there was no more coal or iron in the mines. Think of it! What would we do without any one of these things. And yet people didn't used to be so dependent on them. When our country was first settled, and even as late as 1800 there were no railroads, no trolley cars, no telephones, no huge reservoirs; people didn't use iron much in those days. If you were asked to, could you trace by a few steps how all this complication came about? Could you tell how people at first made everything they used in their homes, and how from that self-sufficiency, they have come to make almost nothing in their homes?

EXERCISE

Go back to Section II, From Home to Factory, pages 8-18, and for each story write a sentence in your notebook giving the main idea that you got from it. Follow each one with one or two other sentences that you can now write on the subject after studying the rest of the pamphlet or from your general knowledge. For each story, then, there should be either two or three sentences. Write this summary so that if a stranger were to read it he would see clearly how the change came about in going from a simple to a complicated life.

Now from a study of cities we are going to a study of nations. See if you do not agree that a nation is just a *very large community*, and that as a whole it depends upon much the same things that a city or town or still smaller community depends upon. Remember that the parts of a nation, or of most nations, are tied together by railroads, by telephones, by telegraphs, by lakes and rivers. If they are separated from each other by oceans, in the same way cities are separated from each other by rivers or lakes; nevertheless such cities depend upon each other. Should nations depend upon each other, or should they try to live separately. Decide this if you can as you study Part II.

PART II.

CAN A NATION LIVE BY ITSELF?

I. WHAT WOULD HAPPEN TO AMERICA IF SHE COULD NOT TRADE WITH OTHER COUNTRIES?

What do you think would happen if the people of the United States should wake up some morning and find such newspaper headlines as these staring them in the face?

England, France, Germany and Japan Refuse to Trade With the United States

NO PRODUCTS OF OTHER COUNTRIES COMING TO AMERICAN PORTS

History has repeated itself. What happened to the American people in 1807 has happened again—no foreign goods are coming to American ports. For the first time in one hundred years we are cut off from other countries. Neither our ships nor those sailing under foreign flags will bring us the products of other lands. The United States must depend upon herself, at least for a while,—no one can predict for how long. The President has called special meetings of his Cabinet. Business and labor leaders are hurrying to Washington to take stock of the resources of the nation and to find out the best way of handling them.

Can the American people exist with-

out supplies from other nations? That is the question now facing the United States. Can we raise enough wheat, corn, and cattle to meet our needs? Can flour be made to feed 100 million people? Can meat be packed and distributed to all parts of the country? Have we enough fuel in our mines and forests to keep our railroads going and our mills running? Can our iron mines and steel mills continue to operate, or must they cut down to part time? Will building slow up, and cotton and woollen manufacturing plants close their doors? Will millions of our men and women workers be thrown out of employment? These are questions that the American people are now forced to answer.

CAN NATIONS EXIST INDEPENDENTLY OF EACH OTHER?

CAN THE UNITED STATES?

Of course the newspaper clipping is imaginary, and to us in America it does not seem possible that other nations would ever combine against us and refuse to trade with our country. But suppose that they did. They have refused to trade with Russia ever since 1918. If they refuse to trade with one country, is it not possible that they might refuse to trade with another? What if they combined against England? What would she do if no ships could reach her ports? Could the little Island produce enough wheat and corn and cattle and sheep for the needs of her people? Could

she get enough coal from her mines for fuel? Could she raise enough cotton to keep her factories going if no ships were bringing supplies from other nations? What has life in Russia been like since 1918? Have her people had all they needed to eat and to wear and to keep them warm since other countries stopped trading with her? No, Russia is starving, and thousands of her people are dying from lack of food and insufficient clothing. Let us think about what would happen to us if the United States had to depend upon herself alone for all that she needed.

Would we starve? Would we, like the Russians, die in thousands? Would our children drop onto their cots in hunger and weakness, and lie there until they died as the Russian children are doing? Every few years we read of great famines in other countries, in India and China, and of hundreds of thousands of people dying of starvation. Could a refusal of other nations to trade with us bring about such a situation in the United States? With our vast stretch of territory, our temperate climate, and our great transportation facilities, could there be a famine that would result in the death of such multitudes? (What would transportation facilities have to do with it?) No, that is unthinkable for our country. But if, without a famine, all the other countries refused to trade with us, could we live on what we could produce? Or, would New York and Chicago and Detroit find themselves in the condition that Vienna, the capital of Austria, is in now? Here is what an American visitor wrote back from there not long ago:

"In Vienna soap is more precious than gold, and as for food there is so little that children die daily of starvation and of tuberculosis . . . Now there is no gaiety, and the women, who were brought up to avoid work, must struggle to make both ends meet."

The American visitor took a Viennese woman out to lunch, and this is what she said of her and her family.

"She ate ravenously. I took her to the best hotel. There for enormous prices one could get a real meal. When she had finished she looked at my plate: 'May I take what is left?' she said.

"She took out the daintiest of pocket-handkerchiefs. She brushed the remnants into it; then she put it into the silk-lined bag. Without a quiver, quite simply, she said: 'I no longer have any pride. We are starving. My family will envy me because I have had meat. It is long since we have had any. . . .

"Miss von Pott's uncle had been an Austrian Ambassador. The family still wore beautiful clothes; they still lived with quaint formality. But their only food was the regulation ration. It was not enough and they could buy no more. The pension allowed diplomats was that paid under the old regime. With the [drop in the value of money] this pittance was not enough even for rent. They were slowly being squeezed to death.

"There was a diplomats' kitchen for destitute diplomats. Here the starving aristocracy could eat. They sat next to their former servants and consumed cabbage soup. The von Pott family ate at the kitchen. But cabbage soup is not very nourishing. Miss von Pott's mother was dying. She had lost forty pounds. I had a few cans of sardines and a little sweet chocolate brought from Switzerland. These I gave Miss Pott for her mother. She was very grateful. When she found I wanted to study starvation in Austria, she said, 'Let me take you about.'

"Each day we lunched together. Each day she took the scraps left back home."¹

Could a trade embargo bring the United States to such a pass? Let us think about what our daily lives absolutely depend upon, and see whether it is possible for us to produce these necessary things in large enough quantities within our own boundaries to supply all our people.

Make a list in your notebook of the kinds of food you must have regularly every day in order to live. Make sure that you do not include things that are not absolutely necessary.

In another column list the materials that would be needed to make clothing that you would have to have. Ask yourself whether each of these items is something you couldn't get along without.

Make a third list of the materials you can think of that are necessary for building houses.

To the Teacher: At this point develop from the suggestions of the pupils, first, a complete blackboard list of food, clothing, and shelter items that are *necessities*; second, make a list of food, clothing, and shelter items that would be regarded not as necessities, but as *articles of comfort*; and third, make a list of the items that are *luxuries* which the masses of our people do not enjoy and which we could get along without. The purpose of this exercise is to have the pupils separate in their minds the necessities of life from articles of comfort and luxuries.

Now make three more lists of food, clothing, and shelter items that would not be necessary in order that you could live, but that are necessary to a comfortable living. After you have done that, make three lists of luxuries that are neither necessary to comfort nor enjoyed by the masses of our people.

WHAT KINDS OF WORK DO PEOPLE DO IN CITIES?

From where does all this food come that one hundred million Americans must have in order to live? Does each family raise corn and wheat and potatoes in its own garden patch? Does each family keep a cow from which

¹ From Literary Digest, 1922.

it gets its fresh milk every day, and are the vegetables for the table grown in the back-yard of each home? Does each household fatten hogs, raise cattle, and prepare its own meat?

No, not in 1922, for half of the people of our country live in cities and don't even have back-yards or front-yards, or any place at all for gardens or for animals. Many thousands of our people live in apartments, tenements, or small frame houses built on small plots of ground 25 to 40 feet wide and 50 to 100 feet deep, fronting close to narrow paved streets. At least half of the children of America never saw a plow, or a reaper, or a young pig; they never saw a cow milked. Their milk comes to them in sanitary bottles purchased at a corner grocery store, or delivered by a dairy wagon; they get their bacon all nicely sliced and packed in labeled cardboard boxes, or it is sliced at the neighborhood butcher's while they wait. Bread—Ward's Schultz's, Cushman's, or whose not—comes nicely wrapped, of a certain weight, and guaranteed as to quality and cleanness; fruit from a thousand or two thousand miles away is sold from a vendor's wagon or at the corner fruit store. Coffee from half way round the world can be purchased from the A. & P. man, and he will grind it at a moment's notice. So it goes. In such ways as these we in America today can get all our foods. Each person does not need to raise them or prepare them for himself; he can buy them from somebody else.

But was this always possible? No, not at all in pioneer days. In Western Massachusetts in 1700 there were no milk deliveries or corner groceries; in western New York and Pennsylvania in 1775 there was no bacon to be bought in neat boxes or bread to be purchased at five cents a loaf, nor were these things known in the Mississippi Valley states in 1830-1850. Even as late as 1850-1870 the people who were settling the western lands of the Rockies and Oregon and California did not have things done for them in such ways. They had to do everything for themselves; they were pioneers dependent upon the land for their living. Each man with his sons plowed his own ground with hand-plows and horses and oxen; they sowed and harvested their own wheat and corn (mostly corn); and the boys milked the cows and tended the pigs and horses. The wife and daughters prepared corn cakes, mush, and hominy, which appeared on the table with monotonous regularity. You see they couldn't begin to have the variety in food that we have in these days. Beef was a great luxury then—it still is today in a few scattered places in our wide land. Instead of being able to step to the phone and ask the neighborhood butcher to deliver two pounds of steak, each farmer—the people were all farmers then—had to kill his own cow and do all the things that are now done by our meat-packers, to get it ready for cooking. And he didn't have any fruit until he raised it in his own orchard.

If things are so different today and people depend upon someone else for their food, what *would* happen if other countries refused to trade with us?

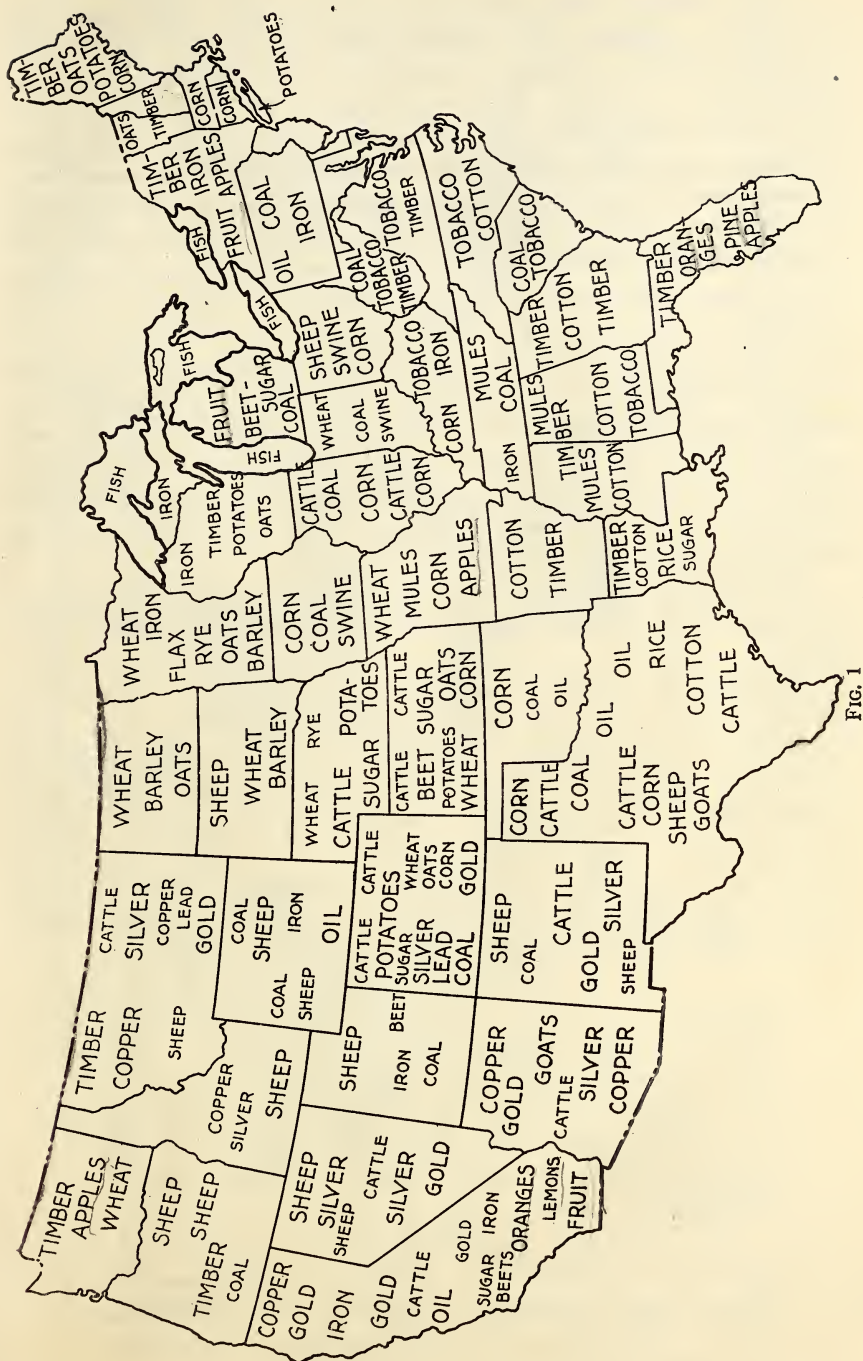


FIG. 1

Does "someone else" mean other countries? Or, does it mean that even though we Americans live differently than our pioneer forefathers did, we divide labor and do things for each other so that all our wants can be supplied from the products of our own country? In other words, do we mean by "someone else" the person or persons who have a large shoe factory which makes thousands of pairs of shoes to be sold to any who want to buy, while another person perhaps has a meat-packing industry where animals are butchered and packed, and bacon put up in small boxes for sale? Do we mean by "someone else" the person who has a large farm on which he raises immense quantities of wheat, corn, oats, while "someone else" has a big mill where the wheat is made into flour, and so on? If this is what we mean when we say that all these various things which our forefathers had to do for themselves are done for us, we need to find out whether there are enough people and enough goods raised and manufactured in our own country so that we are not dependent upon "someone else" outside America. If there *are* enough people and enough goods, then if our newspaper headlines told us that the other nations had refused to trade with us, we would not need to be alarmed.

Study the map of Fig. 1. It will help you to answer the question, Could the people of the United States live without supplies from other nations.

Look back at the first list you made in your notebook. Did you have cattle, hogs, wheat, corn, oats, barley, potatoes, sugar, fruit? If so, study Fig. 1 and see if we raise these things. The fact that we raise them, does not mean, of course, that we raise enough. How would one find out about the quantities we raise of the different products? Are there books or atlases that one can go to for such information? Yes, if you should go to the librarian in your school or town library and ask her to help you find out whether in this country we raised enough of the different products to supply the needs of our people, she would send you to books like the following:

1. *The World Almanac and Encyclopedia for 1922*, published by the New York World Press Publishing Co., New York City. These Almanacs, one published for each year, contain figures on many things that you will want to look up in your studies at school and oftentimes at home.

2. *The Daily News Almanac*, published by the Chicago Daily News, Chicago, Illinois. This gives the same kind of information.

3. *Geography of the World's Agriculture*. By V. C. Finch and O. E. Baker, 1917. This can be secured from the United States Department of Agriculture, Washington, D. C. It gives hundreds of maps showing where things are raised and manufactured in the United States.

4. *The New World.* By Isaiah Bowman. World Book Company, Yonkers, N. Y., 1921. This is an authoritative book and contains a most valuable collection of facts about the resources of foreign countries.

Here is a series of maps that will show you where the food of the world is raised. We shall study them more carefully than now at later times during the year, but we wish to use them at this point to help answer our question whether America could get along without trading with other countries.

WHERE THE PEOPLE OF THE WORLD LIVE

The first map, Fig. 2, is given merely to help you identify the countries in the different parts of the world, and for Canada and the United States it shows the provinces and states also. You will notice that on the maps of the other figures the names of the countries are not given, so whenever you have any difficulty in telling what countries produce certain foods you must turn back to your identification map, Fig. 2, and find out their names.

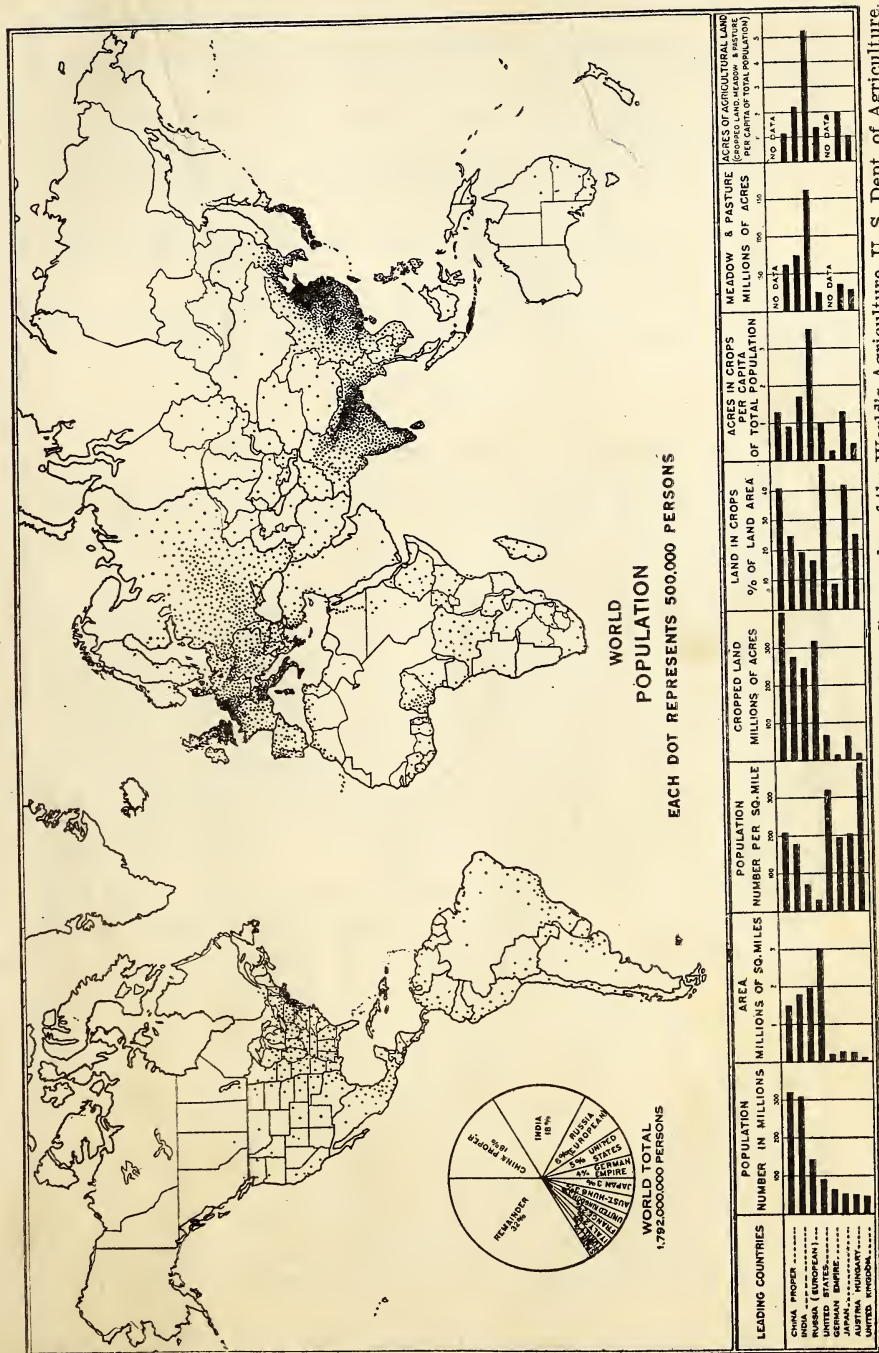
The population map, Fig. 3, shows where the people of the world are living. What does it mean when there are a great many dots close together? What do a few dots mean? The bar graphs below the map give you a kind of summary of population facts; they tell you about how many people are living in the eight countries of the world which have the largest population.

What other important facts do you get from the bar graphs of Fig. 3?

Are you surprised to find that China and India have so many people? Together they have about 6.50 (fill in) million people. When the map was made in 1917 there were about 1.792 people in the entire world. The people of China and Japan together comprise about 21 per cent of the whole world's population. The United States ranks 5 in per cent of population. Its population of about 100 million is 5 per cent of the whole number of people in the world.

In what parts of the world are people living together most closely? Have you any idea why there are almost no people in north central Africa, in central and southern South America, all through the northern part of North America, in central Australia, and throughout northern Europe and Asia? We will not take the time now to find out all the reasons why, for we are coming back to this very important subject later. But can you tell the class one reason for the lack of population in these parts, before we go on?

To the Teacher: One of our principles of arrangement of this material is to introduce an important matter rather casually before taking it up fully. This is an example of it. Do not spend much time at this point on the last question. We will give more facts and questions on it later.



Flinch & Baker: Geography of the World's Agriculture, U. S. Dept. of Agriculture.

FIG. 3

If you were a farmer wanting to invest in land where there would be the least possible competition in selling your products, what country would you choose? Tell exactly why.

The bar graphs below the population map, Fig. 3, will help you to answer the following questions:

1. Which of the eight countries listed have the most people per square mile? *United Kingdom*

2. Which countries get the largest crops from their land? Where does the United States stand in this respect? *U.S.*

3. Is this sentence true: The United States has more acres in crops in proportion to its population than any other country. *yes*

WHERE IS THE FOOD OF THE WORLD RAISED?

Have you begun to decide whether our country is self-sufficient—that is, whether it could exist without help from any other country? Have you enough information yet to answer your question?

Even though we have a large territory, and sow millions of acres in foodstuffs, are we able to provide the different kinds of food our people need to live on? Do you know what kinds of food are used most by people scattered over the earth? Breadstuffs are used most generally by civilized people, and breadstuffs are made from different kinds of grain—wheat, corn, rye, barley, rice. Look back at Fig. 1 and see how many of these are raised in this country. Even if they all are, what other information do you need? Notice whether some of these same products are not raised in Russia and Austria where the people are now starving.

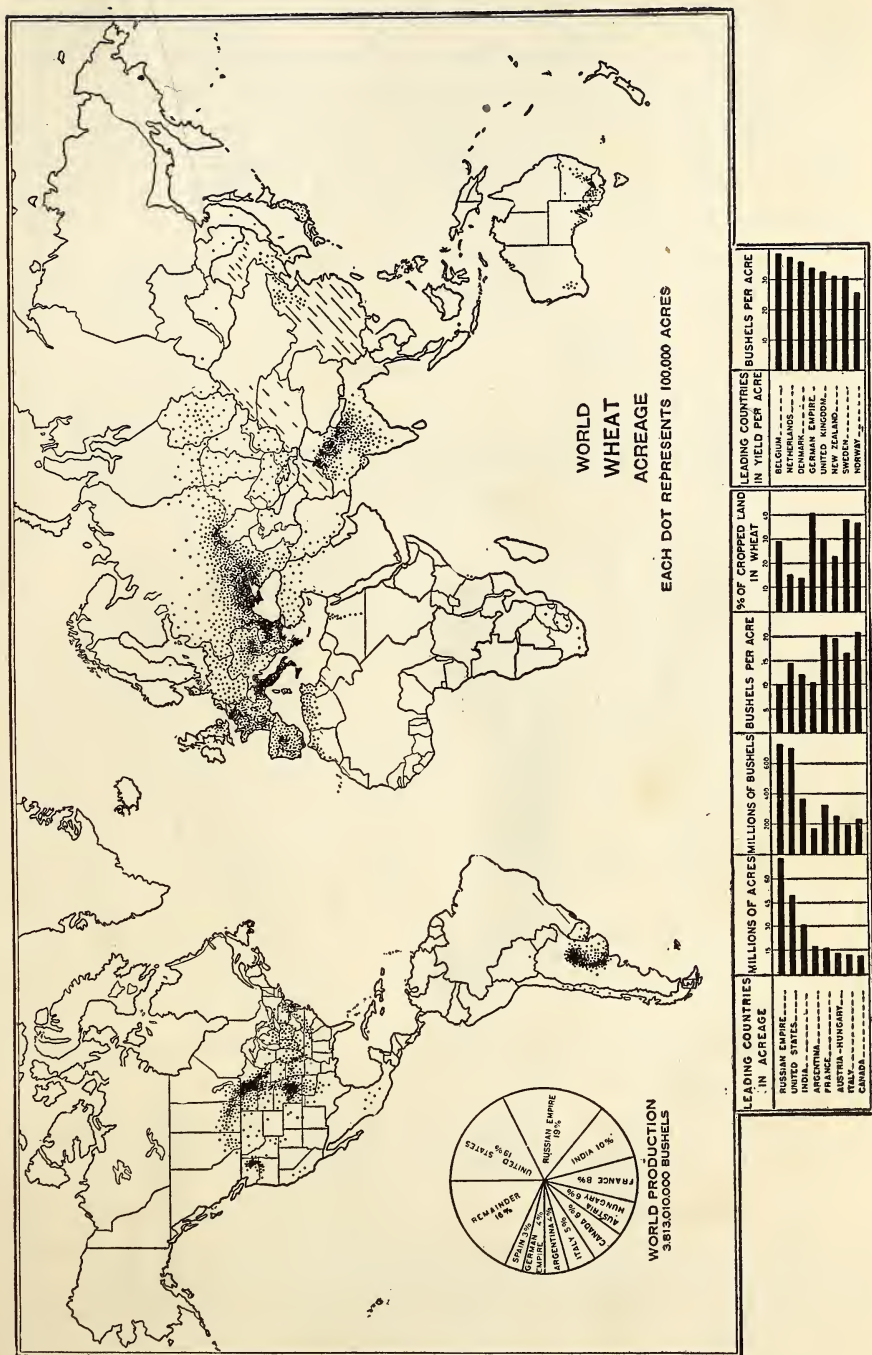
Let's see where the wheat of the world is raised. Study Fig. 4, the wheat map, for wheat is the civilized world's most important grain. How can you tell from the bar graph that it is the most important? About what per cent of all their cropped land is given over by the various countries to wheat? *X* This fact about our country is changed from pioneer days, for corn was then the most important grain; corn is much more easily prepared for eating when you do not have machines and appliances, than wheat.

1. What are the eight wheat-producing countries today?

2. Which one has the most acres in wheat? Which one raises the largest total amount?

Compare the two lists of countries given in Fig. 4 very carefully. Is there a single country that appears in both lists? Can you tell why. Are the countries in the first small or large? Are the countries in the second list small or large.

Now study Fig. 5 which shows the amount of wheat produced and used by eighteen different countries. Give all the facts that it tells you



Finch & Baker: Geography of the World's Agriculture, U. S. Dept. of Agriculture.
FIG. 4

about the United States. Do these facts help you to answer your big question? In what way? Put a sentence in your notebook showing whether as far as wheat is concerned we are dependent upon other countries.

Canada leads all countries in both production and consumption per capita of wheat, with Argentina ranking second, and Australia third in production, while France stands third in consumption. The United States ranks seventh in production per capita and tenth in consumption.

What about corn? What is the great corn-producing country of the world? Do you think the United States would have to buy much corn from other countries See Fig. 6.

Without taking into account our large acreage, do we raise corn as well as other people do?

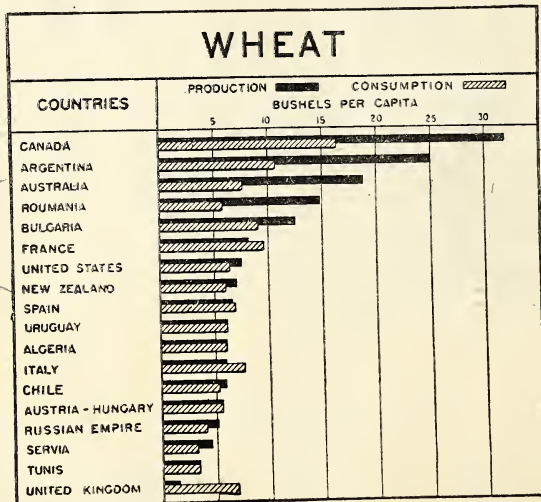


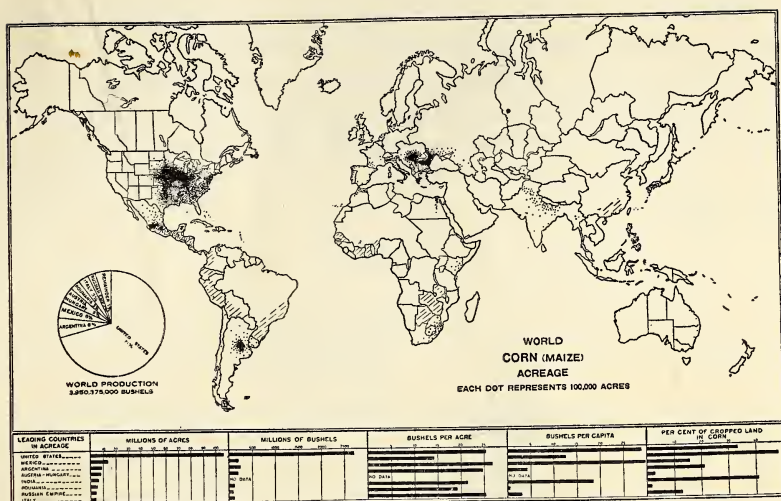
FIG. 5¹

Considering our large population, do we raise as much corn to an acre of our land as other countries?

Now write a sentence in your notebook telling whether we would be dependent on other nations as far as corn is concerned.

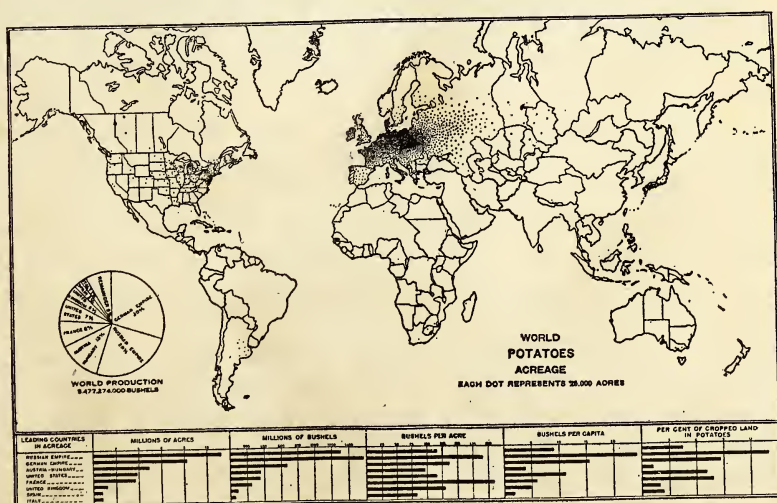
Fig. 7 shows where the potatoes of the world are raised. Which are the two greatest potato-raising countries? Which ones get the best yields per acre? Does it look to you as though the United States would have to get potatoes from other countries? Put another sentence in your notebook—about potatoes.

¹ Finch & Baker: Geography of the World's Agriculture, U. S. Dept. of Agriculture.

FIG. 6¹

RECENTLY WE HAVE SHIPPED MUCH FOOD TO OTHER PEOPLE

What do you think—would our people go hungry for bread if we could not trade with other nations? Would they have to make bread out of potatoes as the Germans did in 1917 and 1918 when so many millions of their men went to war and the Allies formed a blockade all around Germany? Bread in America is usually made from wheat, but in times when wheat is scarce and hard to get bakers and housewives have to fall back on other cereals. Then they use corn and rye to make bread, and even bran and rice

FIG. 7¹

¹ Finch & Baker: Geography of the World's Agriculture, U. S. Dept. of Agriculture.

and potatoes. In 1917 and 1918 America was called upon to help feed England, France, and Italy, and to aid in winning the war against Germany. With so many of their men taken from the fields to fight in the war, our Allies found it impossible to raise enough breadstuffs to feed their people, so we had to help them. That we did help them is shown by Table I, which gives the value of foodstuffs we shipped to other countries in each year from 1904 to 1921.

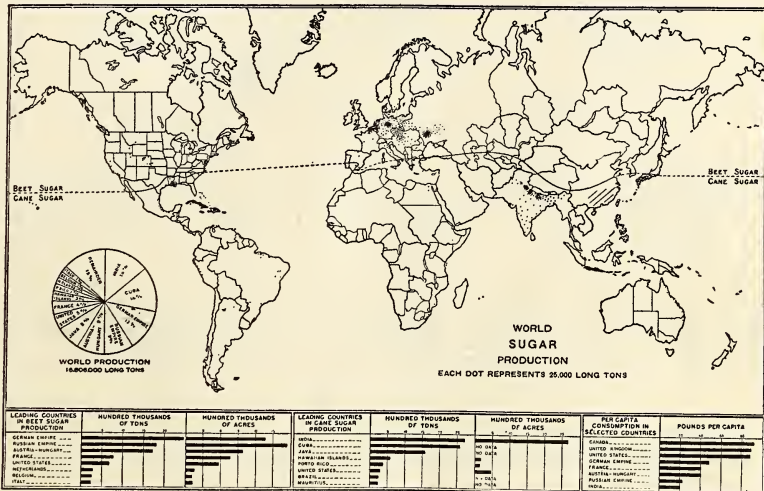
TABLE I.

Year	Value of Foodstuffs Exported by the United States
1904	\$444 millions
1905	401 "
1906	525 "
1907	513 "
1908	522 "
1909	438 "
1910	369 "
1911	385 "
1912	419 "
1913	503 "
1914	431 "
1915	961 "
1916	881 "
1917	1269 "
1918	1529 "
1919	2503 "
1920	2141 "
1921	1795 "

See how the number of millions go up in 1918, 1919, and 1920. Even though the war was over in November 1918, the soldiers of the different countries of course didn't get back to work at once. It took months for them to be discharged from service and to get back to plowing their fields, to sowing—and months later—harvesting their crops, to the factories where they were working when war called them away. Once they got their crops in, their own supplies were on the way, but they had to wait months for harvest time when the grain could be gathered and shipped to the mills to be made into flour for bread and other foods. In the meantime, of course, they had to live, so during 1919 someone had to feed the people of England and Europe. Who was there to do it but the United States? Who else had great food resources? No other country had as great supplies. Do you see how Table I tells what happened? So great was Europe's need even in 1920 that our people continued their immense shipments of raw materials and manufactured foodstuffs throughout the year. And in 1921 we still continued to help feed Europe, and even yet the amount of foodstuffs we send over there has not dropped back to the totals of three to five hundred million dollars which were normal in the years 1910-1913 just before the war.

Does this bring you nearer to your answer to the question whether America could raise enough food to feed her people should other nations refuse to trade with her? Of course you can not yet answer the question fully because you do not know just what foodstuffs were included in our shipments to Europe. Perhaps she got some necessities from other countries, and perhaps we had to get goods from other countries in order to send her what we did.

What about sugar? Can you remember how in 1917 and 1918, after we ourselves had entered the World War, that we had great difficulty in getting sugar? Your mother would send you to the grocer for sugar and the most he would give you was a pound—or, if your mother would use it for preserving fruits, perhaps five pounds, for that would help economize on other sweet things? If you went to the restaurant, you would be given one

FIG. 8¹

lump with your coffee, or a single spoonful, or a tiny envelope half full. A bowl of sugar on a hotel or restaurant table was a very unusual sight, and we felt the pinch a great deal. We didn't feel it so much on wheat and corn though, did we? True, we ate more brown bread and corn bread than we ordinarily do and less fine white bread; but no one in America went really hungry for bread on account of breadstuffs being shipped to Europe.

Why did we notice the difference in the sugar supply so much more than in the flour? One important reason you can get from the sugar map, Fig. 8. Who raises the sugar of the world? What are the great sugar-producing countries? Do you notice how about half of the world's sugar comes from beets and half of it from cane? The map shows interestingly how

¹ Finch & Baker: Geography of the World's Agriculture, U. S. Dept. of Agriculture.

beet sugar and cane sugar are not raised in the same places. There are two rather clearly marked zones—the northern one for beet sugar and the southern one for cane sugar.

About what per cent of the world's crop of sugar does the United States raise? Where in the United States is sugar raised? Can you see now the reason why we had to use sugar sparingly, especially in 1917 and 1918? What is the reason? Study Fig. 1 again.

Of the foodstuffs we have studied so far, which one would we have to raise more of or get along without?

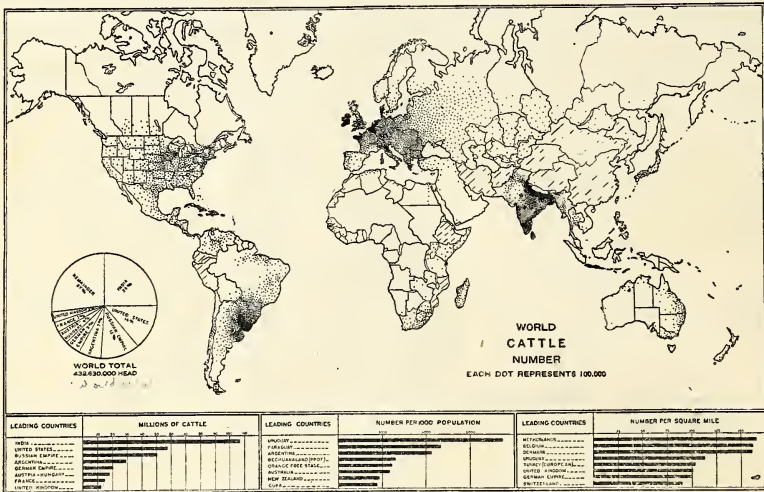


FIG. 91

What is a very important food that we haven't yet talked about, of which we sent a lot to Europe during the war? How about meat—especially beef and pork? Fig. 9 shows you where the world's cattle are raised.

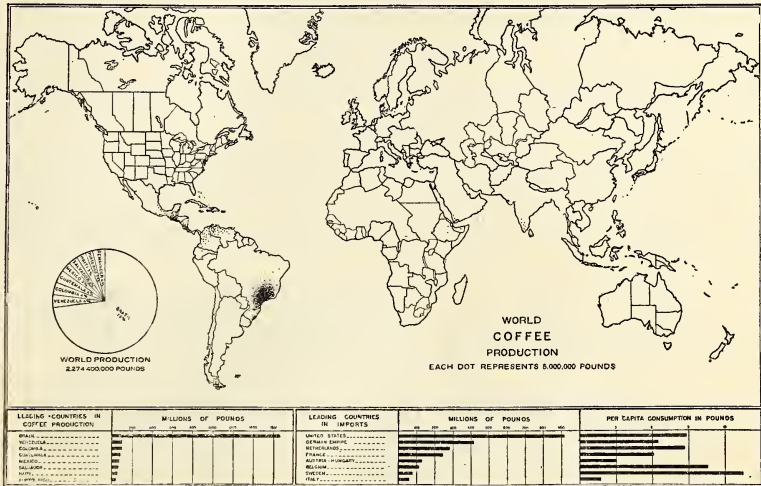
What are the four great cattle-raising sections? How important a country is the United States for cattle-raising? For swine-raising? If trade with other nations were cut off, do you think we would have enough beef and pork to supply our needs? Do we raise as many cattle in proportion to our population as do the smaller countries?

Why do you think it is that of both grain and meat the smaller countries succeed in raising a larger amount per acre and per square mile of their territory than we do? Is it because they have more people to feed per square mile? Is it that they are better farmers and know how to make their land produce more, or why is it?

Write a sentence in your notebook showing whether we are independent of the rest of the world as to sugar and meat.

¹ Finch & Baker: Geography of the World's Agriculture, U. S. Dept. of Agriculture.

Now for coffee. The American people drink millions of gallons of coffee every day. There is hardly a household but serves it for breakfast; and in thousands it is served at lunch or dinner as well. "Coffee, sir?" is the query that comes from the waiters at every hotel and restaurant at practically every meal they serve every day in the year. The Americans are a great coffee-drinking people. How much coffee do we raise ourselves? Figs. 10 and

FIG. 10¹

11 will tell you. What would happen if our foreign trade were stopped? Would we have coffee? No, we would go without, for we raise none. We use over twice as much as any other country in the world, and yet we raise not a pound. But is coffee a necessity? Many physicians and scientists would be glad if we couldn't get coffee, for they tell us that it is injurious to good health. Whether that be true or not, the American people have the coffee habit and yet must depend on other countries for their supply. Make a statement in your notebook as to whether we would be self-sufficient and independent of other nations for our food since we raise no coffee ourselves.

What is the great coffee region of the world? The leading coffee-producing country is

.. *Brazil* (fill in) which raises *73* per cent of the world's product.

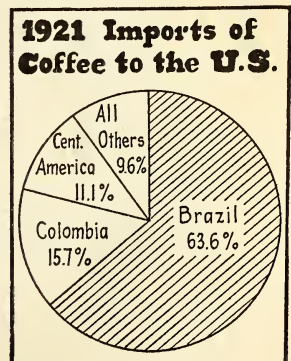


FIG. 11

Where does the fruit we use come from? List the states that you hear mentioned in connection with apples, oranges, grapefruit, pears, peaches, pine-

¹ Finch & Baker: Geography of the World's Agriculture, U. S. Dept. of Agriculture.

apples, grapes. Why would we have to raise most of the fruit that we use? Without a map other than Fig. 1, you can make a pretty fair guess, can't you, as to whether we are independent of other nations so far as fruit is concerned?

Now have we taken up the basic foods of the American people? Yes. There are other foods that we consume in large quantities, but the ones we have discussed are the most important ones, and the ones which would determine whether we were a self-sufficient nation.

WHAT WE BUY AND SELL FROM OTHER COUNTRIES: "EXPORTS" AND
"IMPORTS."

You have come to your conclusions about whether our people could live if other nations refused to trade with us by learning where the world's foods are raised. There is another way of finding out whether the United

TABLE II.

CHIEF U. S. EXPORTS AND IMPORTS, YEAR ENDING JUNE 30, 1921.

ARTICLE	EXPORTS		ARTICLE	IMPORTS	
	Dollars			Dollars	
Agricultural Implements	51,064,831		Meat Prod.—Lard	131,329,199	
Animals	17,617,041		" "—Total	355,398,441	
Brass	13,568,529		Musical Instruments	9,112,449	3,679,895
Breadstuffs—Corn	60,030,717		Naval Stores, rosin, etc.	22,024,424	81,865,383
" "—Rice	19,313,001		Oil Cake, etc.	19,512,826	55,608,511
" "—Wheat	92,734,569		Oils, Mineral	535,560,369	2,943,942
" "—Total	689,813,094		Oils, Vegetable	38,194,426	98,577,656
Cars (auto, and parts)	1,071,866,449		Paints, Varnishes, etc.	20,888,851	680,575
Cars (R. R.)	200,798,495		Paper	79,748,650	6,752,111
Chemicals—Dyes, etc.	25,930,942		Paraffin	20,518,912	
" "—Excts, med.	18,320,137		Photo Goods	22,220,260	665,430,646
" "—Soda	15,470,235		Spirits, Distilled	8,774,200	48,367,828
" "—Total	110,284,401		Sugar	43,739,437	
Coal—Hard	50,615,372		Tobacco, Leaf	237,051,083	12,880,943
" "—Soft	301,979,315		" "—Cigarettes	24,996,141	22,714,581
Copper, and mfg.'s of	91,484,611		" "—Total mfgs.	30,882,494	178,912,567
Cotton, raw	600,186,189		Vegetables	24,899,302	61,232,658
" "—manufactures of	240,359,702		Wood, timber, lumber, etc	144,172,501	77,902,393
Dairy Products	47,360,130		Wool, mfgs, of	20,950,110	23,132,319
Eggs	11,251,081		Wool, raw		10,875,941
Electrical Machinery	119,221,928		Art Works	1,029,431	30,931,397
Explosives	46,959,567		Beads and Bead Orn'ts		176,988,079
Fertilizers	24,969,271		Cocoa or Cacao, crude		13,020,937
Fibers, including twine	19,604,205		Coffee		110,324,289
Fruits—Apples	18,812,616		Earthenware	9,784,566	31,944,697
" "—Total	65,338,504		Fibres, Manufactures	19,604,205	34,468,087
Furs and Skins	13,008,973		Fish	19,207,574	105,989,967
Glass and Glassware	23,387,607		Nuts	1,790,782	10,542,583
India Rubber & mfg. of	59,665,572		Hides	2,843,737	42,527,748
Iron and Steel—Mach'y	4,119,945		Lead	4,241,875	54,944,056
" "—Tot mfr.	1,037,976,095		Precious Stones		190,320,202
Leather	45,238,890		Seeds	4,940,096	55,348,266
" "—mfg. of	32,909,404		Silk, Unmanufactured		17,594,694
Meat Prod.—Bacon	103,114,918		Silk, Manufactured	16,975,419	53,248,562
" "—Hams	40,088,562		Tea		
			Tin	968,344	

World Almanac 1922, Page 160.

States can live on the food she produces. That is by comparing the amount she sells to other countries—her exports—with the amount she buys from other countries—her imports.

Table II gives a list of the exports and imports of the United States for the year ending June 30, 1921.

“Exports” means articles that any of the people of the United States sell to other countries. “Imports” means articles bought by any of our people from the people of other countries. So anything that we raise or manufacture, such as flour, hides or shoes, cotton or cloth, iron or steel rails, and we ship to other countries, is called an “export”. Anything that we take in to the United States from any other country is called an “import”.

From Table II you can compare the amount of each important article that we sold to other people with the amount that we bought from them. Answer the following questions from it:

1. To what extent do we depend upon other countries for our railroad cars? our automobile?
2. If trade with other nations were cut off, would our cotton mills continue to run? Explain your answer.

TABLE III.

Year	Manufactures ready for Consumption	
	Exports	Imports
1904	\$349	\$253
1905	402	252
1906	460	308
1907	481	364
1908	489	332
1909	440	299
1910	499	368
1911	598	361
1912	672	360
1913	776	408
1914	725	449
1915	807	336
1916	1,998	312
1917	2,943	377
1918	2,185	403
1919	2,384	393
1920	2,834	745
1921	2,643	744

3. Would our steel mills and railroads have to stop operating because of lack of coal? Because of shortage of railroad cars and machine parts?

4. If the trade embargo were prolonged two or three years, do you think those who wear fur coats or use animal skins in one way or another would have to do without? Why?

5. Would we be inconvenienced by lack of fish?

6. Would our fibre manufacturers keep right on doing business just the same?

Table III shows our exports and imports of manufactures ready for consumption from 1904 through 1921, in millions of dollars.

What do you notice about the export and import columns in this table? Do the figures of the import column increase to correspond with the increase in the export column from 1916 on? Write in your notebook a few sentences telling the facts that this difference suggests.

Does Table III indicate that we have been depending on other countries for the manufactured articles we use?

Have you enough information now to answer the question, Can the United States exist independently of other nations? What is your answer?

II. ENGLAND, A LITTLE ISLAND, MASTER OF ONE FOURTH OF THE WORLD

"I tell you, England wouldn't last a month if we stopped shipping goods to her. That little island! Why, look at the size of her—not as large as this state of Kansas; and look at the way she's fixed—depends on other countries for nearly everything she uses."

The proprietor of the Paola House in Paola, Kansas, settled back complacently in his arm chair after these few remarks with an air of having completely demolished his opponents' arguments about England. Four typical Yankee travelling salesmen, marooned over a hot week-end in this small town hotel, were sitting alongside of the proprietor with their feet over the shining rail before the large plate-glass window fronting on the square.

Presently a distinctly foreign voice broke the silence, its owner pulling a chair up and adding his two feet to the row on the shining rail. "Do you know, sir, that 'little' England is the greatest trading nation in the world, that she exports more coal than even the United States? Do you know that for three hundred years she has been the greatest manufacturer of woollen goods in the world? That she has more than thirty million sheep right now? Did you ever get a glimpse of one of those maps where the number of sheep are shown by dots—one dot for every 200,000? Well, England looks like someone had spilt a bottle of ink on her—it takes that many dots to show the number of sheep she has! [Do you see how Fig. 12 shows this?] Did you know that since the War she has picked up on her iron and steel trade until now she exports more than the United States—and this in spite of the fact that the War nearly knocked us completely out?"

"Yes, that's all right," came from one of the salesmen, "England's got lots of cloth and steel mills, but"—triumphantly—"you can't eat wool and steel. What about wheat and corn and meat? Why I understand that England, Scotland, Ireland, and Wales together don't raise one fourth of the wheat they need to keep their people alive!" (Was he right? Can you tell from Fig. 5?)

"That's true enough, our United Kingdom depends on other parts of the world for food. If we should be completely blockaded, we'd be starving in a month. We probably haven't got a month's food supply in England right now. And right there, men, is one of the reasons why we're not giving Ireland her independence. If an attempt should be made to

blockade us, it's a fine position we'd be in with submarines running in and out of Ireland's hundreds of bays and inlets! But let me tell you, it's pretty difficult to carry through a blockade. You'd never do it, and you know why—England's navy. The greatest navy in the world!"

"You're right there," broke in one of the salesmen, "England's been Mistress of the Seas for three hundred years—ever since she licked the Spanish Armada. I knew enough history for that."

"Sure," the proprietor, still unconvinced, came back, "sure. But we're not talking about war—about absolute blockades. We're talking about not trading with England, and I say she couldn't live a month without



Why do you think England raises so many more sheep than other countries? Who are her rivals?

FIG. 12¹

the trade of other nations. Suppose Argentina should decide not to ship wheat to you, and to buy our coal instead of yours—we *could* sell her what she needs, you know. Suppose she should—what would you do? Suppose that Russia—the Ukraine—should not send you any wheat either. What would you do? And, to clinch the argument, you know perfectly well that England doesn't raise a pound of cotton, don't you, for all the millions of yards of cloth that she manufactures, uses, and sends abroad each year.

"Yes," the Englishman agreed with a smile, "yes, not a pound. We bring it all in from the outside."

"Well, then, how can you think England would outlast a trade boycott—an embargo? We wouldn't have to blockade her; we could simply stop trading with her. You know the people who favor the League of

¹ Finch & Baker: Geography of the World's Agriculture, U. S. Dept. of Agriculture.

Nations say that's the best way to make a country come to time—just stop trading with her and soon she'll have to do as the other countries think she ought to."

"That theory wouldn't work in the case of England, my dear fellow. You'd have to defeat her navy first. You know England's got colonies and ships. She doesn't need to trade with other countries—that is, foreign ones. Every foreign ship in the world could refuse to sail into a British port, and we could still secure the food and cotton and other things we need to keep going. Are you surprised? You needn't be. Don't forget our great merchant marine. Do you realize that Great Britain has more tons of ships and cargo sailing under her own flag than any other country in the world? Yes, we are Mistress of the Seas because we have both a great navy and the greatest merchant marine."

"But," insisted the proprietor, "if a trade embargo was declared against you, your ships couldn't get into the ports of other countries to get the goods."

Again the quiet smile came over the confident Englishman's countenance. "Oh, ho! by 'other countries' you mean foreign countries; their ports of course would be closed to us. But you forget that we control ports in nearly every quarter of the earth. We can get cotton from India and cotton from Egypt—both our colonies—by millions of bales; wheat from Bombay and Calcutta—also England's own—millions of bushels,—not as good wheat as Argentina's or Russia's or yours in Kansas and the Dakotas, but good enough to get along on in a pinch. We could get wheat and cattle from Australia, too, and spices, tea, rubber for our great rubber factories from China. Why, men, London is the most important trading city in the entire world for the rubber, tea, spices, jute, and such oriental goods that come from certain ports in China. And did you realize that the great port of Hong Kong, among others, is under England's control although China is way on the opposite side of the earth—12,000 miles away!

A chorus of objections met his astonishing statements. Unperturbed he went on:

"You are astonished? You do not think it possible? But it is true, every bit. It wasn't true a hundred years ago, but since then a great change has come about in "proprietorship" in the different parts of the earth. Today England is master and controls one fourth of the territory of the whole world. And more than 400 million people—one fourth of the entire population of the earth—are governed under the British flag."

The argument that followed these remarks was, you may be sure, a heated one. To the Yankee salesmen such statements were preposterous.

They simply couldn't be true. "That little island with less than 34 million people master of a quarter of the earth's surface!" "Absurd" they were saying.

Are you thinking so, too, by this time? Do you know enough about England—about the United Kingdom—to decide whether the Englishman spoke truly? Is there a British empire? Does it extend round the earth? Does it take in 440 million people? These are certainly important things to know if they are true. Furthermore, it is important to know why and how such a thing ever came about.

If all the nations of the earth should combine against the United States, she could provide the necessary foods and materials for clothing and shelter which her population demands. This you have just learned from reading and map studies. Is this true of the other great nations of the world?

Do you know what the great "powers" are? In the World War which ended in 1918, the great nations opposing each other were *Germany*

Austria... Turkey... Bulgaria... against...

France... Belgium... Russia... England...

Japan... Italy... U.S. (Fill in the names.) Does each of these

countries cover a large area? Does the map of Fig. 2 tell you that the United States is one of the largest countries of the world? From this map compare the extent of the territories of the other countries in the list that follows. Write the numeral 1 before the largest country; 2 before the second largest; 3 before the third largest, and so on through the list. If you cannot tell from the map whether one country is larger than another, look up the area of each country in the tables in the back of your geography.

...*1* Germany

...*2* China

...*3* France

...*4* Russia

...*5* United States

...*6* Mexico

...*7* Spain

...*10* Argentina

...*11* The United Kingdom

(England, Scotland,
(Ireland, and Wales)

...*3* Canada

...*4* Brazil

Which country is the smallest? Which three are the largest?

Do you think the countries largest in area also have the most people? Look up in the back of your geography for the population of each of these countries, and fill in the larger spaces below.

	Area			Population	
Germany	10	179,500	4	63,000,000	
China	1	4,300,000	1	320,650,000	
France	4	212,192	6	41,000,000	
Russia	5	1,800,500	2	111,000,000	
United States	14	3,037,519	3	91,972,000	
Mexico	7	767,300	9	15,100,000	
Spain	9	192,000	8	19,083,000	
Argentina	6	1,074,000	10	8,700,000	
The United Kingdom	11	121,398	5	48,260,500	
Canada	2	3,759,365	11	7,205,000	
Brazil	3	3,300,000	7	24,308,000	

Number the largest 1, the second largest 2, and so on through the list.

How does the list of territories compare with the list of populations? Would you say that the countries of largest size have the largest number of people?

We are especially interested in England. What does the list you have made tell you about the territory and the population of England? Let us study the size of England as shown on the world map. What a small country it is! It doesn't look much larger than Italy, and certainly it is not as large as France or Spain or Germany or Sweden. Perhaps it is no larger than Czecho-Slovakia. You can check this up from the figures in your geography. And how small the little island is compared with the United States, Russia, China, or India?

Now, let us turn to the population map, Fig. 3. Notice how black England is, especially the southern part. Can you imagine the city of London with its four million people down in the heart of the blackest region? Locate it on a map in your geography. It is about 50 miles up the Thames River on the southeastern point of England.

Forty-five million people in that little group of islands! Can it be possible? Does the population appear to be scattered equally over the British Isles? No, thirty-four million of the people in the United Kingdom—that is, England, Scotland, Ireland, and Wales—are in England alone. Only four million are in Ireland, and about seven million in Scotland, and Wales. Furthermore, the people of England live to a very large extent in towns and cities. Just think, one-fifth of all England's people live in greater London (the city and surrounding suburbs) alone. It is almost impossible to think of, isn't it? Look over at the way the population is scattered in the United States. Are our people concentrated in cities the way they are in southern England? Yes, along the Atlantic coast and through the northeastern part of the country the map looks very

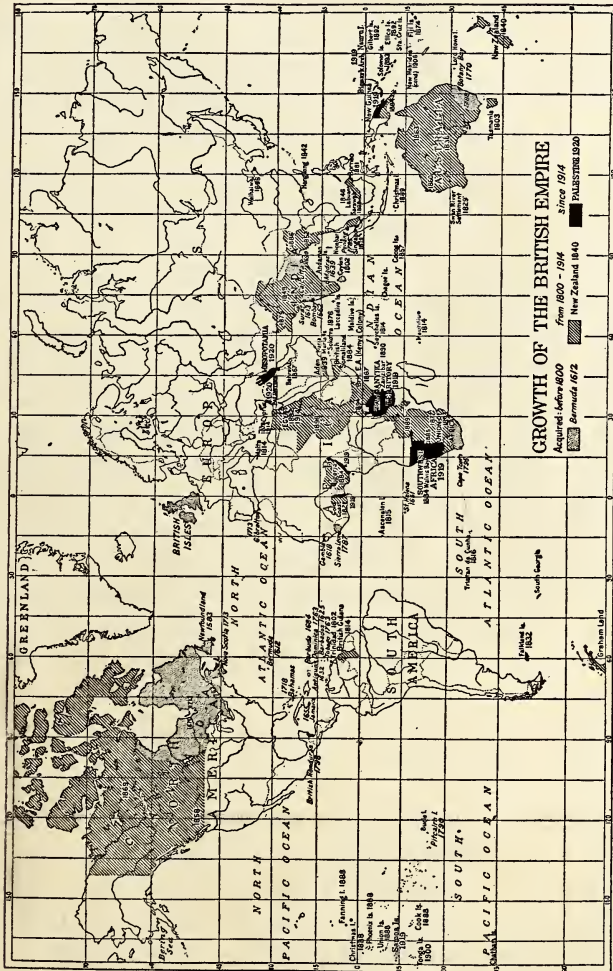
black indeed. Can you tell where New York, Boston, Philadelphia, Baltimore, Pittsburgh, Cleveland, and Chicago are? Well, the people are living as closely together pretty generally all over England as they are in such cities as these in America. This great concentration of human beings in a little country like England is very important for us to study.

Examine the bar graphs below the population map, Fig. 3, which show the number of people living, per square mile, in the different countries. Of the eight countries which are given there—China, India, European Russia, the United States, the German Empire (before 1918), Japan, Austria-Hungary, and the United Kingdom—which one has the largest number of people to the square mile? Which has the smallest number? England has almost 400 and the United States has only 25. Think of it—400 people to the square mile. Out in the far West of the United States there are many hundreds of square miles in which less than two people live to each square mile. In pioneer times this was true to an even greater extent, and throughout the whole early history of our country there were great stretches of land almost entirely uninhabited. The line which marked off the inhabited region from the region where less than two people were living per square mile was called the frontier. That line disappeared as people moved on out to the coast and settled patches all over the country, but even now the United States with its 106 millions of people, is so large that there is an average of one square mile of land to very 25 people. But in England there is only one square mile to every 400 people. Notice the large number of people Germany has to the square mile. Look at Germany on the population map. Do you see the black area where Germany lies? Now look over at Asia—China with more than 200 people to the square mile, and India with 180 to the square mile. Similarly, Japan with 190. China and India are huge countries of tremendous area with over 600 millions of people—40 per cent of the population of the entire world. The English people on the other hand—smallest of all the great powers—live huddled up in the southern corner of a little isolated island. Why is England a great power since she is so small?

Are the countries of largest size the countries of greatest power? Were they the leading countries in the World War? Are the countries of the largest population the countries of greatest power? How many of these were "powers" in the World War? Was China? She has a tremendously large territory with over 300 million people, and hence a labor supply that is almost unlimited. Was India? She too is large and has hundreds of millions of people, but is she a world power?

On the other hand, England is very small—only a small fraction of the size of India or China with a tenth as many people as either of those countries. But she is a world power. She controls the destinies of peoples by the millions in lands all over the earth. Why is she a world power?

Is France regarded as a world power? Is the little island empire of Japan with an area less than a tenth as large as India, and less than a thirtieth the size of China, regarded as a world power? In spite of her size, she sat in at the peace table at the end of the World War and helped to decide the fate of the Germans in Europe and the Chinese across the Yellow Sea in China. What do you think makes a nation a world power?



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Compare with Figs. 17, 18 and 19

FIG. 13

Do you think the people of England could continue to live long if the United States and France, Spain, Germany, Italy, and all the other great countries of the world should decide some fine day that they would not trade with her, that they would not send any ships with food or machinery or clothing, or manufactured goods of any kind to England's shores?

How could she? With 400 people to every square mile of her territory, she certainly wouldn't be able to raise enough crops and animal stock and at the same time manufacture all that she would need to supply the wants of her people.

Yet, England could exist even if this unthought of event should take place. How can it be? Can you see any differences between the countries of which you found the area and population a few pages back which would suggest the answer?

Have you thought of the fact that some of the countries are home countries only—that is, that all the territory they own is within a single boundary line, and that others are both home countries and have colonies? To which class does England belong? The United States? Japan? France? China? India? Russia? To which class did Germany belong before the War? To which class does she belong now? Which of these countries are world powers? Does this suggest to you an answer to the question, What makes a nation a world power?

Let's see where England gets the food, coal, and articles for manufacture which she uses but does not produce within her own island?

What part of the wheat that Englishmen consume in breadstuffs do you think is raised in the home country? Turn back to Fig. 5. How many bushels of wheat per capita does the United Kingdom consume? How many does it produce? In the last of countries represented in this chart which are the ones that pay allegiance to the United Kingdom? Do these countries produce more or less than they consume? From which countries, therefore, do you think England gets her wheat?

In 1919 the United Kingdom imported 3200 million pounds from other parts of the Empire (that is, from her colonies) and over 3900 million pounds from foreign countries. The following table shows what countries she imported from.

United States	3200 million pounds	Australia	1500	"	"
Canada	1700	"	"	Argentina	700
				"	"

Which of these countries belong to the British Empire? You will notice that India is not mentioned, although she produces wheat. Why doesn't England get wheat from India? She could get all she needed without going outside of her empire at all. One reason is that she gets better wheat from Argentina and the United States, and another one is that in return for wheat these countries purchase coal and manufactured goods from England. But if she needed to, she could get her whole supply from Canada, Australia, and India, so that so far as wheat is concerned, a trade embargo would not seriously worry her.

What about other foodstuffs—potatoes and cattle? Turn back to Fig. 7 and answer the following questions:

1. Who raises the potatoes of the world?
2. How does England stand as a potato-raising country?
3. From the information you have in the map and the bar graphs below it, what is your judgment as to whether England would be independent of the rest of the world as far as potatoes are concerned?

Now turn to the cattle map, Fig. 9, and answer similar questions from it?

Meanwhile, you can easily see why England wants to maintain very friendly relations with Canada and Australia. Certainly if she did not have these countries which she controls to depend upon, she would starve in a very short time in case of a trade embargo.

THE LEADING PART PLAYED BY THE COTTON AND WOOLLEN INDUSTRIES OF ENGLAND.

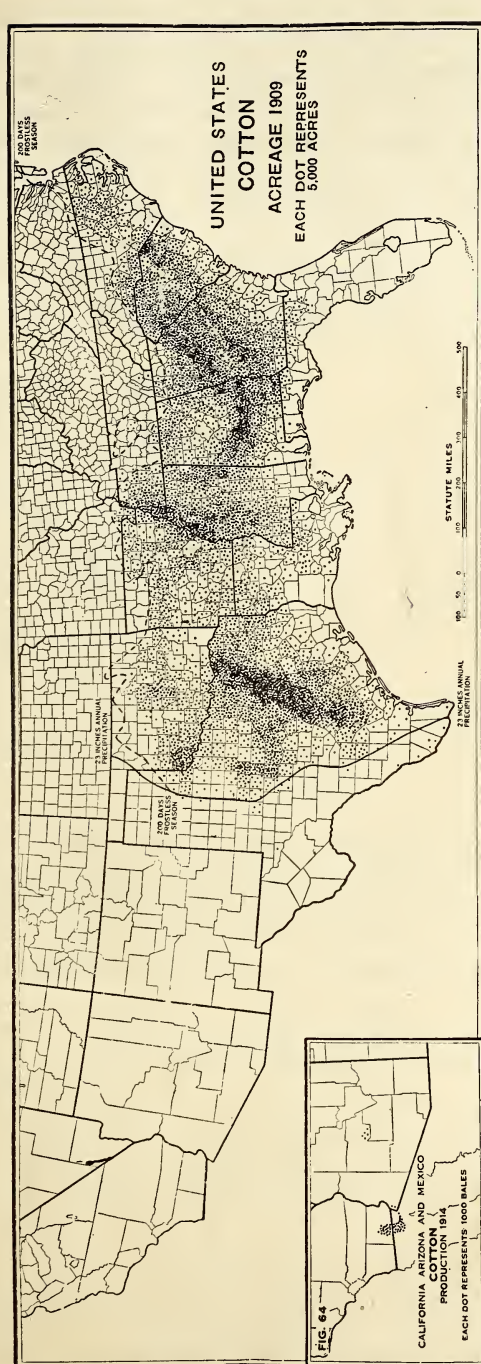
Since the days of the 1400s and 1500s when all yarn was spun and cloth was woven laboriously by hand, the woollen and cotton fabrics of England have been sold in many parts of the earth. After England's inventors in the 1700s and early 1800s learned how to make many new kinds of machines, weaving that had formerly been done slowly and at great cost on hand looms was done quickly and in large quantities by the use of the flying shuttle invented by Kay in 1738, the spinning jenny invented by Hargreaves in 1764, the spinning mule invented by Crompton in 1779. And when—most important of all—Watts showed them how to make machines go by steam power (1769), England's manufacturing increased by leaps and bounds. At first she was very jealous of having her inventions used in other parts of the world. You remember how the American colonies were not permitted to spin yarn, to manufacture cloth, or to make iron goods. The government of the mother country working in close co-operation with her manufacturers restricted manufactures in all the colonies and dependencies. That has been the history of affairs in Ireland from the beginning. For hundreds of years Ireland was oppressed by the English king and the parliament largely because the Irish had learned how to manufacture things. As early as 1600 the Irish made fine woollens. They sold these abroad in England and France, and in other countries of Europe. They had learned how to make cotton goods, how to turn out articles of glass, of iron, and how to refine sugar, but after English weavers learned how to make fine cloth they did not want their trade interfered with; so they got the English government to forbid the Irish to make woollen cloth. This began as early as 1699. In the next 150 years England passed one law after another that in the end made it practically impossible for Irishmen to manufacture or sell the things they had learned how to make. This is a good illustration of the way in which when manufacturers in a home country build up a big business there is a tendency

on the part of the home government to decide to restrict manufacturing in the colonies. Certainly it was true in the American colonies and in Ireland.

The climate of the British Isles is such that much rain falls, grass lands abound, and sheep and cattle-raising have been turned to rather than to growing of grains. The map of Fig. 12 shows the one agricultural pursuit in which the British Isles are supreme. England raises more sheep than other European nations. The United Kingdom alone has over 30 distinct breeds of sheep. The blackened area of the British Isles in the map may well mean to you 23,000,000 sheep which are kept on the British Isles.

Climate Rainfall
The chief reason they are kept on the islands is of course that English weavers of woollen cloth make the wool from the sheep, and from the wool they manufacture the fabrics. So you see the sheep and the woollen industries of Great Britain with their hundreds of years of history go hand in hand. England has thousands of skilled dyers, spinners, carders, warpers, weavers, finishers, working in its scores of woollen factories. Can you find Leeds on the map of England, and Bradford and Leicester? Well, these are the principal woollen and manufacturing centers for cloth, worsted goods, blankets, hosiery, and carpets. Study the topography on a physical map of the British Isles. (What do we mean by "topography"?) Do you see how these communities are in the hilly section of northern England? To the south where the land is more level, the small proportion of the population engaged in agriculture is to be found.

While England's supremacy in woollen manufacture has been developing, her leadership in cotton manufacturing has also been growing up. Isn't it interesting to find that England is one of the chief cotton manufacturing countries of the world in spite of the fact that she doesn't raise a pound of cotton in the entire island? Cotton can be grown only under the most favorable conditions of temperature and rainfall. For that reason we find that only four regions on the earth are producing the world's cotton supply: first, the southeastern part of the United States; second, the central and southern parts of India; and third, a small area around the mouth of the Nile River in Egypt. Sixty per cent of the world's cotton is produced in the southern part of the United States. Examine the map of Fig. 14. Do you see the heavy line marked "200 days of frostless season" surrounding the states of North Carolina, Tennessee, Arkansas, Texas, Louisiana, Mississippi, Alabama, Florida, Georgia, and South Carolina? This is the famous cotton belt of America. Do you see the other heavy line surrounding this belt marked "23 inches of annual precipitation"? This means that each year there are about 23 inches of rainfall. The black dots, each one standing for 5000 acres on which cotton is raised, give you a good illustration of the



¹ Finch & Baker: Geography of the World's Agriculture, U. S. Dept. of Agriculture.

What kind of a climate does cotton need to grow well? What other regions in the world besides southern United States produce much cotton?¹

FIG. 14

fact that cotton must have an even, frostless climate and a moderate and well-distributed amount of rainfall. The cotton plant requires about seven months free from frost with plenty of rain. This means of course that England with its heavy rainfall and its variable climate could not raise cotton. The fields have to be ploughed and planted in April and May when it is fairly dry as it is in southern United States. In mid-summer when the plants are rapidly growing rain is wanted. This too is true of conditions in our southern states. In the autumn when the cotton is developing and the growth of the stem of the plant is much slower cotton needs little rain. But these conditions are not true of England and so she raises no cotton.

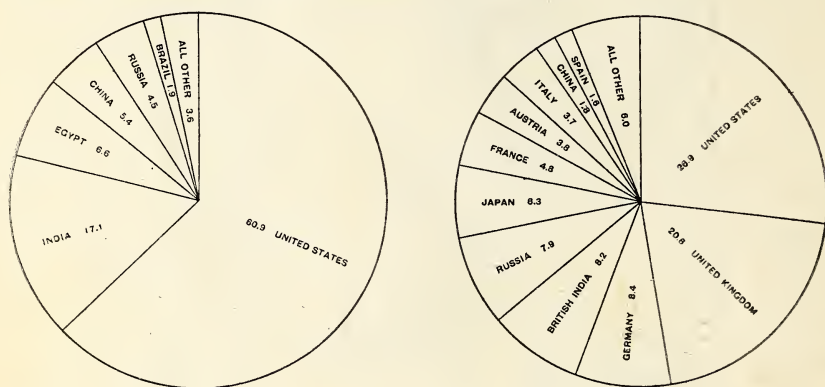


FIG. 15

Which countries raise the world's cotton? Study Fig. 15. What are the three great cotton-raising countries? How many of these are controlled by England? What would happen if the United States refused to let her have any of our cotton? Diagram A of Fig. 15 shows the amount of the world's production of cotton raised by the different countries; Diagram B shows the percentages used by the different countries in the year 1913. Compare the amount England uses with the amount she produces. Could India and Egypt alone supply England's needs? Do either of these countries use any themselves? If, however, England couldn't get any cotton from the United States and had to depend entirely upon Egypt and India for her supply, do you not think she would be able to get along on a little less and in that way be independent of other nations? That is quite probable.

Would England be able to keep warm if a trade embargo were declared against her? Would she have enough fuel to keep her ships' furnaces going? Could she keep the engines of her trains fired, and could she find enough fuel for her factories? Study the bar graphs of Fig. 16.

ENGLAND MANUFACTURER, NOT FARMER.

Do you notice that the little island of England alone mines 22 per cent of the whole world's coal? How much does she consume? This means, of course, that she has seven per cent left to ship to other parts of the world. It means also, doesn't it, that she uses a great deal more for her size than any other great nation; she uses immense quantities for her great

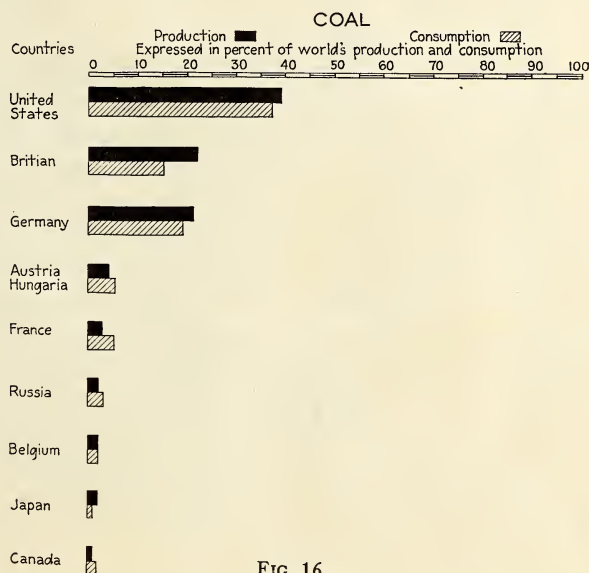


FIG. 16

navy. We think of England, too, as a great manufacturing nation, for you remember she has a very dense population all over her island, and the number of people employed in her factories is many times as large as the number engaged in agriculture. Here is a table which shows the occupations of the people of England and Wales aged 10 years and upward, in 1911.

TABLE IV

Total population in 1911—36,000,000.

<i>Occupations</i>	<i>Total</i>
Government.	299,599
Defence.	205,817
Professional.	714,621
Domestic.	2,121,717
Commercial.	2,214,031
Agriculture and Fishing.	1,260,476
Industrial.	9,468,138
Unoccupied and unspecified.	12,234,914
Total.	28,519,313

Of the 28 and a half million people over ten years of age, over 12 million were either unoccupied or unaccounted for. Of the 16 million for whom occupations were specified, only 1,260,476 were engaged either in agriculture or fishing. Nine-sixteenths—more than half—were engaged in industrial occupations. Over half are making things in shops and manufacturing plants, and one eighth are engaged in trade—in selling the products of the factory workers.

COAL IS KING IN THE MANUFACTURING WORLD.

The great western countries—England, Germany, France, the United States—are the leading ones in these days chiefly for the reason that they manufacture and ship goods all over the world. You will read interesting stories later which will tell you how it happened that our wonderful industrial age developed, how it can be that from 1829 to 1831 England only shipped 243 million pounds of cotton goods, whereas in 1911-1913 she shipped to other countries 2074 million pounds. Such great advances in amount of goods manufactured are due in large part of course to the fact that today nearly everything is made by machine whereas in earlier days so much of the manufacturing was done by hand. If we had the facts for the amount of cotton goods shipped in, say 1750, the contrast with today would be even greater. In 1750 there was no such thing as a lommerlia steam engine or a loom run by steam power. Then all yarn had to be spun slowly by hand and the shuttle had to be thrown back and forth through the warp of the loom by the skilled hand of the weaver.

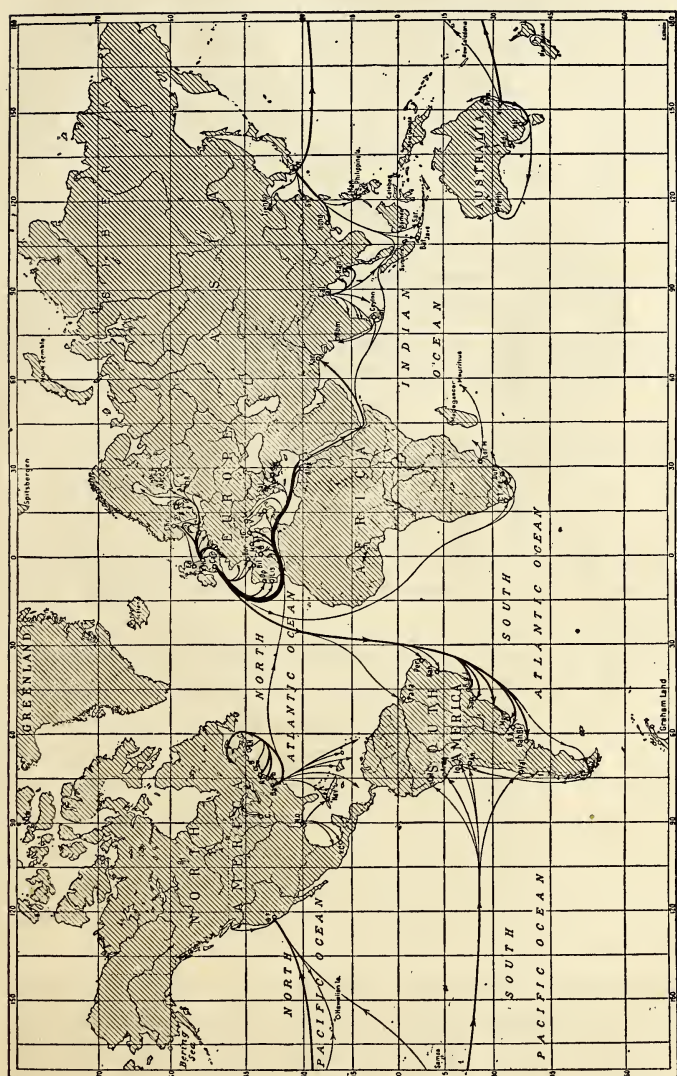
So if we look over the statistics of manufactures today we are startled by the huge figures and by the great growth in manufactures that has come about principally from the use of machinery and the steam engine.

But in order to make steam engines go some kind of fuel has to be burned. During the last century and a half men have learned how to take coal out of the earth, and to burn it in furnaces, and to heat water so as to make steam and thereby generate power. Do you see, then, that for a century to be a great manufacturing center it must have coal or oil or some other kind of power, perhaps water power? For the past 150 years the fuel of the world has been coal.

England is a great coal-producing country, as we have seen. From Fig. 16 you can find out the amount of coal exported by the principal nations of the western world. If you knew nothing else about the occupations of the people of England than what you could get from Fig. 16, in what kinds of occupations would you think they were engaged—in agriculture, in fishing, or in industrial work? Why?

Look at the map of Fig. 17. This shows where the seaborne coal trade of the world is. From what country does the heaviest traffic in coal appear to move? Does the United States appear to export much coal?

To what places does her coal seem to go? Where does England's coal appear to be shipped to? Do you see the heavy strand of coal trade running down from England to Argentina and Brazil and South America? The manufacturers of England have been very clever in planning the



From Bowman: "The New World"; copyright World Book Co., Yonkers, N. Y.

SEABORNE COAL TRADE OF THE WORLD.

The bands show how heavy the different coal shipping routes are. About what country do they center? To what other countries does that country ship coal? What do the English coal ships to South America bring back with them on their return trips? To whom does the United States ship coal?

FIG. 17

shipments of their freight. They ship English and Welsh coal to Argentina and Brazil and in the same boats bring back to England on the return trips large quantities of wheat and meat from Argentina and coffee

from Brazil. Why are the merchants so careful to plan things this way? Do you think it would have any effect upon the cost of foodstuffs in England?

Look again at the very heavy band of trade which appears to go from England south into the Mediterranean Sea. Do you see how the band gets smaller as it moves by the coast of France and Spain and passes into the Mediterranean, finally entering the Suez Canal and becoming very thin as it passes down the Red Sea and through the Indian Ocean? This is a very interesting way that the artist who drew the map had of showing you that as the fleets of coal ships leave English ports some of them sail into French harbors, still more drop out of the line and steam into the harbors of Portugal, Spain, France. Later on some turn northward through the Adriatic Sea and drop anchor in northern Italy. Others leave their stores of fuel in the Balkan harbors, in Constantinople, and even up along the coast of the Black Sea. A few make Alexandria and the ports of Egypt their destination. A small proportion go through the Suez Canal down the Red Sea touching at certain Indian ports on the Indian Ocean.

LITTLE GREAT BRITAIN A WORLD POWER

IS SHE SELF-SUFFICIENT?

What do you think now is the answer to the big question that we faced at the beginning: Could England exist if a trade embargo were declared against her?

Yes, she could exist if all the great nations of the world refused to trade with her. But what is the only thing that makes this possible? What is the secret of her power? Think of 34 million people on a little bit of an island like England being independent of all the great nations of the earth. Germany was blockaded for four years (1914-1918) and had a very difficult time getting enough food to keep her people from starving. Yet Germany had three and a half times as much land, raised more corn, rye, and other foodstuffs than England, and had only half again as many people to take care of. How does England do it? What is the secret of her power and independence?


Colonies and possessions in all parts of the earth—that is the secret! You remember that the Englishman of the story told his companions that England was master of one fourth of the territory of the world. He told the truth, sure enough. Turn back to the population map, Fig. 3, and study the second bar graph showing the areas of different countries. Compare the area of the United Kingdom with that of China, India, the United States. While you're comparing areas, compare populations as shown in the third bar graph. The population of the whole British Empire—that

is, England *and* her possessions—is 475 million, while the population of the whole earth is less than 1800 million, so you see she really controls more than one-fourth of the people of the world. Isn't that astounding!

Now how in the wide world did England gain all this mastery? Did it come all at once? No, very slowly. It has taken her over three hundred years to acquire all the territory she now controls. During all this time her statesmen have followed the policy generation after generation of sending Englishmen out to colonize the rich undeveloped lands of the earth. See how they have gone forth—to Australia, almost exactly on the opposite side of the earth from England; to India, to the eastern coast of China. Fig. 13 will show you how one by one great lands all over the earth have been added to England's domain. What a stupendous settling of a great continent is the work of Englishmen in Africa. Study the map of Africa in Fig. 13. What fractional part of all Africa is now controlled by Britain as a part of the British Empire? Notice the great strip hundreds of miles wide on each side of the Nile River running clear south to Zanzabar and the Tanganyika territory which England secured at the end of the World War. From there she has cut almost a clear path to Cape Town, the southernmost promontory of the African continent. Going up the western coast, Nigeria, the Gold Coast, Sierra Leone, and Gambia are large colonial possessions also forming a part of this great British Empire.

Among the oldest of England's possessions is, of course, Canada. The eastern part of Canada was acquired 150 years ago; the western part definitely became hers a half century ago. More than half of North America is controlled by the little Anglo-Saxon isle. Even into South America and the West Indies Islands, England has found her way, and Bermuda, the Bahamas, Jamaica, the Barbadoes, Trinidad, British Guiana, and British Honduras for more than a century have paid allegiance to the kings of England and have shipped their produce in English ships to the mother country. As outposts on the far-flung frontier of empire we find scattered through the Pacific Ocean many island bases at which British ships touch and on which the natives are ruled by the Union Jack. Find these places on the map of Fig. 13: Christmas Island, Phoenix Island, Union Island, the Samoa Islands, Cook Island, Tonga Island, Ducie Island, Pitcairn Island, Chatham Island, Fanning Island.

Yes, paths of the British Empire have been blazed over the whole world. When was most of it done—1000 years ago? 500? 300? No, most of it has been done in the last century.



MAP EXERCISE

I. On a blank map fill in the possessions Great Britain had before 1800.

How small she was then as compared with what she is today! In Australia one little group of settlements had been made on the southeastern coast. A strip of the western coast of India surrounding Bombay and a strip north of and including Calcutta paid allegiance to England before 1800; a few scattered islands in the Pacific and the West Indies, and the eastern half of Canada—only a small part of which was habitable, however—also recognized her as their ruler.

II. On the same map show in another way—either by dots or lines if you used solid black before—the territory that England acquired between 1800 and 1914.

What a harvest time the 1800s were for England's imperial ambitions! During that marvellous nineteenth century of expansion and industrial progress England acquired great areas of India in 1849 and 1879, adding hundreds of millions of people to her empire. The rest of Australia—90 per cent of the entire continent—was made a part of the British Empire in 1836, 1860, 1863, thus adding a continent five times—yes, ten times as large as the British Islands themselves. Egypt, coming under the control of Britain in 1882 was the entering wedge for Anglo-Saxon conquest in Central and Eastern Africa in 1894 and 1898. Looking up from the small colony of Cape Town in 1795, English aspirations soared until by degrees she had drawn into her union the whole southern end of the continent, the additions being made in 1843, 1877, 1884, 1885, and 1889. Notice how as England entered northern Africa and Egypt in 1882 and worked southward decade by decade, her armies and colonists were also taking over from the southern end great areas of the land and enormous wealth. See how the two met and how the gap between the northern and southern streams of colonization closed in 1919 by the acquisition of the Tanganyika territory. The Gold Coast became Britain's in 1821, and was added to in 1919; Nigeria followed suit in 1894, and was also added to in 1919.

And what shall we say about her recent acquisitions? Has England been content with this great empire? No, even at the end of the World War in settling the territorial claims of the Allied nations and of Germany and her allies Britain acquired huge and valuable outposts in Mesopotamia, Palestine, New Guinea, and South Africa.

III. On your map, indicate in still another way the territories England has acquired since 1914.

You see the war gave her a chance to get away from Germany the land she needed in Africa to enable her to build her railroad straight through the country, uninterfered with. The possession of New Guinea in the East

Indies rounded out for her a big block of territory on the South Sea Islands which has long been coveted by many nations. It was the spice islands of the East Indies which Columbus took the long journey in search of when he discovered America. Do you know or can you find out why England was anxious to get control of Mesopotamia and of Palestine?

Here then is a table showing how her area increased by great chunks.

TABLE V.
GROWTH OF THE BRITISH EMPIRE

	Square Miles	Per cent of whole world's area
1800	1,500,000	2
1850	4,500,000	8
1900	11,300,000	20
1919	13,700,000	25

How could England in the short space of 100 years increase her mastery of the world's population from 2 to 25 per cent? How could she—isolated on little islands with only moderately fertile soil and a climate none too favorable—accomplish such a feat?

SHIPS! SHIPS! SHIPS!

In ships lies the secret. England early recognized the value of ships. She needed ships to colonize, and then she needed ships to protect her colonies. She needed colonies because she needed to be independent of other nations. Never for a single year must the little island depend upon any other country for the wheat, corn, and other staple foodstuffs that her people must have in order to live. In case of war, such dependence would leave her helpless.

By the way, why is war necessary? Why would countries have to be destroyed and millions of lives lost because one country didn't behave as other nations felt it should? Couldn't an isolated country which depended upon other countries for food and clothing necessities be compelled to do the right thing without going to war at all? How? Could England? Why? Could she if she didn't have her colonies?

Evidently Great Britain's leaders sensed some such possibility centuries ago in wishing to provide a constant flow of foodstuffs to England from lands which should be under her domination, for her policy of colonization and expansion is 350 years old.

Do you remember how after Columbus discovered America in 1492 Spain and France and England all began to send out ships searching for the lands of the far East which they had learned were very valuable. You have read the story of Marco Polo and his travels in China and throughout Asia; of

how the Italians and the Portuguese and the Spanish had for hundreds of years been trying to find the way to India, the mystic land of gold and treasure. We have not time now to recount the tales of adventure and daring of the sea-faring men who sailed out on the unknown seas to find these lands all through the 1500s and 1600s—how Spain with her great fleets was bringing the wealth of the gold and silver mines of Mexico and South America back to Spain, how Francis Drake and others of the English pirates were robbing the Spanish galleons of their stolen gold, how the Cabots sailed along the eastern coast of North America, and how Frobisher was trying to find a way through the ice of Labrador and the Hudson Bay region, how Sir Hugh Willoughby and Richard Chancellor were exploring the Baltic Sea and the eastern Arctic regions and sending caravans out through icy Russia and across the trackless mountains of Persia and Turkeystan. You have probably read many of these interesting stories before this. But you must remember that while all these things were happening, the leaders of England were also driven by the desire for the wealth of foreign lands and as far back as that were laying the foundation for the greatest maritime nation of the world.

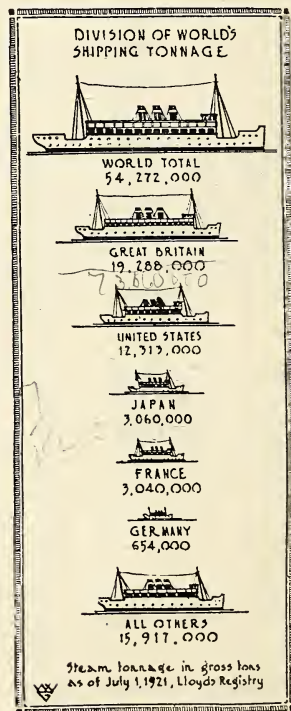
How well they have accomplished what they set out to do! Study Fig. 18.

On July 1, 1921 the world had 54 million tons of shipping.¹

Of this more than one-third was Great Britain's. Think of it! With nearly a score of really important countries in the world, one of them, a little island, controls over one third of all the shipping.

The United States had nearly a fourth of the tonnage in 1921—12 million tons out of 54. If you should add together the tonnage of the United States and Great Britain, what would you find. What fractional part of the world's ships do these two English-speaking nations together own? How does the tonnage owned by Japan, France, Germany, and "all others" compare with that owned by Great Britain?

Do you see, then, that after England started her policy of establishing colonies in all parts of the earth during the 1600s she had to have ships and



(From The Magazine of Wall Street)

¹ From Industrial Digest, Feb. 11, 1922.

FIG. 18

¹ The freight that can be sent in a ship is measured in tons of 2000 pounds each. We speak of a ship or of a freight car as having a certain tonnage. A large ship today is one that will carry 15 or 20 thousand tons. A hundred years ago a ship that would carry 300 tons was considered large.

ships and more ships to keep watch over them, and to bring their produce back to the mother country? Remember that from 1620, when the Pilgrims landed at Plymouth, until 1783 the thirteen English colonies on the Atlantic coastal plain in America were a part of these colonial possessions; they were the beginning of the great nation of over 100 million people which is now the United States and which rivals the mother country itself in territory and in shipping. After England lost her thirteen colonies and with them the rest of that whole western country clear through to the Pacific which gradually became a part of the United States, she began in earnest the policy of enlarging her possessions in other parts of the world. Had you realized that we were once a part of the great British Empire?

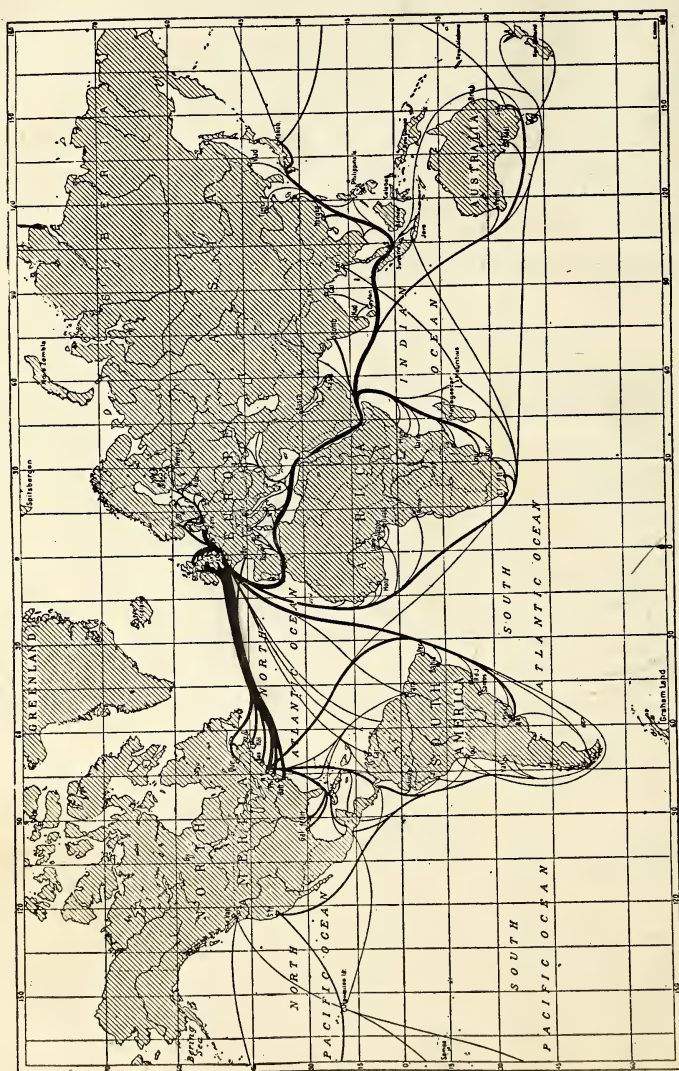
WHAT ARE THE CHIEF SHIPPING ROUTES OF THE WORLD TODAY?

The map of Fig. 19 answers the question. How well it confirms what we learned from Fig. 18 of the shipping tonnage of the world. Do you see the great band of trade tying England and the United States together? The widths of the lines and the bands are proportional to the tons of freight actually carried. Notice how the bands encircle England, leading into her various ports—London, Liverpool, Bristol, Southampton, Glasgow in the far north in Scotland. Can you not see great cities growing up as a result of such immense fleets of sailing vessels and steamboats going back and forth between the Atlantic coast of America and England? Study the map to see what ports of America and England these ships sail from for other ports of the world. What are the largest ports of the United States? On which coast are most of them situated?

We said a few pages back that England's possessions all had to be tied to the mother country by ocean transportation. Trace the lines that start from England. Where do they go? The heaviest one, of course, goes to America. Notice that the next heaviest one is that which shows the path of shipping through the Mediterranean Sea, from there down through the Red Sea into the Indian Ocean down the southeastern coast of Africa, over between the mainland of Asia and the islands of Samatra, Java, Borneo, the Phillippines, up to the great Pacific Ocean ports of Hong Kong, Shanghai, and Yokahama. Turn back to Fig. 13 and see whether there are lines from England to all her possessions. Does a heavy one branch off and go to India? Is there one to Australia? to New Zealand? to Canada? And what about her domain in Africa? Notice the band that takes English coal to Argentina and other ports in South America from where it returns with cargoes of wheat, wool, and hides.

So we have come upon a number of important facts: first, that the great shipping routes of the world revolve about the United States and England; second, that the location of England's colonies have a great deal to do with

important
the trade routes of the world; third, that there must be some important relation between the shipping routes of the world and the distribution of population.



The width of the bands shows how much freight is shipped on the principal routes of the world. How England depends on trade! Is she "Mistress of the Seas?" Who is her closest rival? Why does England have trade so far from home?¹

FIG. 19

See if you can find out what the relation between shipping routes and distribution of population is. Turn back to the population map, Fig. 3. Study the two maps together.

How do you think the great shipping routes of the world depend upon where England's colonies are? Could you prove to a stranger that they do depend upon the location of the colonies?

¹ From Bowman: "The New World"; copyright World Book Co., Yonkers, N. Y.

Turn again to Fig. 13, and notice the dates on the different islands scattered over the world which have become a part of the British Empire. Do you see that most of these outposts of empire have been acquired since 1800—yes, since 1875? When did England secure Aden? When was the Suez Canal constructed? England controls that too. Follow the line that goes through the Mediterranean to the very eastern point of it and then appears to stop. It seems to go under ground and then to come out a little farther south and run down into the Red Sea and the Indian Ocean, there dividing into two main strands—one going eastward toward India and China and the other ploughing down the east coast of Africa.

How do you think it happens that the band of freight is just as heavy over that eastern region as it is through the Mediterranean? Why, for the reason that it is the same traffic. What appears on the map to be a distinct break is merely the place where men have cut a great ditch to connect the Mediterranean Sea and the Red Sea. This is the Suez Canal.

In your geography turn to a map which shows Africa and the Mediterranean and Red Seas. Do you see where the Isthmus of Suez joins Asia with Africa? How far do you think it is across the Isthmus? What is your estimate of the number of miles? Why do you think England was willing to go to the expense of building a great canal across the Isthmus of Suez?

Distances

From England to Cape Town.....	6080 miles
From Cape Town to Australia.....	6077 miles
	<hr/> 12157 miles
From England via Suez Canal to Australia...	11634 miles
	<hr/> 523 miles

Can you see from this table one reason why England was anxious to have the Suez Canal built? What is the greatest advantage to her? The 523 miles is the distance saved by every English ship that goes to Australia. On a round trip you see 1046 miles of travel are saved. What does this mean? Besides time in travelling, what other saving in expense is there? What about the shorter trips? Does the Canal save any distance in going to India? to Aden? to Singapore?

Do you see now how important the Suez Canal is to England's ocean transportation? Remember that the Suez Canal was not constructed until 1869; it has come only with the development of steamships in the past half century, but it has been a great commercial success from the first. In 1870 only 486 vessels went through it. In 1900, 3441 made the trip, and by 1912 the number had increased to 5373. From 1870 to 1912, in other words, the tonnage on which tolls were collected (you see they charged each ship a toll

fee to go through the Canal) grew from 437,000 tons to 20,275,000 tons, and it has been increasing ever since. The Company which built the Canal and still owns it makes its money principally out of the toll which is charged on every ton that goes through. The government of England was not so much concerned in the profit to be made from the Canal as it was in having its rights preserved so that its ships could always go through it. So in 1875 the British government through its great leader, Lord Beaconsfield, purchased 176,602 shares from the ruler of Egypt who owned them at that time. In 1915 there were 372,746 shares of stock of the Suez Canal Company in circulation. So you see the English government does not actually own more than half of the shares which it would need to own to absolutely dictate the policies of the company. Yet do you see also that England occupies the foremost position in the affairs of the Suez Canal?

It is interesting, however, that the Suez Canal like our own Panama Canal is an international waterway. When the company received its concession from the Egyptian government to build a canal at this place, it was stipulated that the "canal shall be opened to all as a neutral highway without any exclusive distinction or preference of persons or nationalities." So in 1888 at a convention held by Great Britain, Germany, Austria, Spain, France, Italy, the Netherlands, Russia, and Turkey, it was agreed that the canal should "always be free and open in times of war as in times of peace to every vessel of commerce or of war without distinction of flag." Great Britain herself was largely responsible for having this agreement signed by these nations. Do you see how very important it has been for England to either control this great waterway so far from the home country or at least to see to it that it was open to her ships? The very security of England and her possessions has rested upon waterways and ships.

From the map of Fig. 19, which country would you judge uses the Suez Canal most?

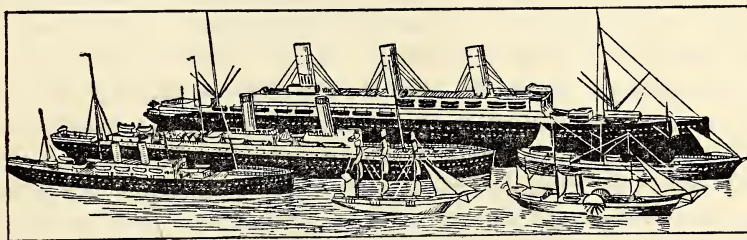
Out of a total of 18 million tons which went through the Suez Canal in 1911 England owned nearly half. Germany was second with only one-fourth as much as England, France third, and the United States fourth.

To the Teacher: At this point certain fundamental facts of location should be tested and learned. Use blank mimeographed maps of the world. Four types of exercise are provided for (1) the location of England's colonies, (2) the location of important shipping centers of the world which are connected to England's trade, (3) the ten most important shipping routes of the world, emphasizing England's strategic position.

EXERCISE

Now locate the Panama Canal, and write in your notebook a summary of facts similar to those we have been talking about with regard to the Suez Canal. When was it built? Who owns it? What is the amount of ton-

nage that passes through it? What country uses it most? Do you think that in time to come trade by this route will exceed the trade by way of the Suez? Why? Look in your geography and get all the information you can about the Panama Canal. Use a *World Almanac* or *Statesman's Year-Book* for the figures you need, and be able to make a complete report on this subject to the class.



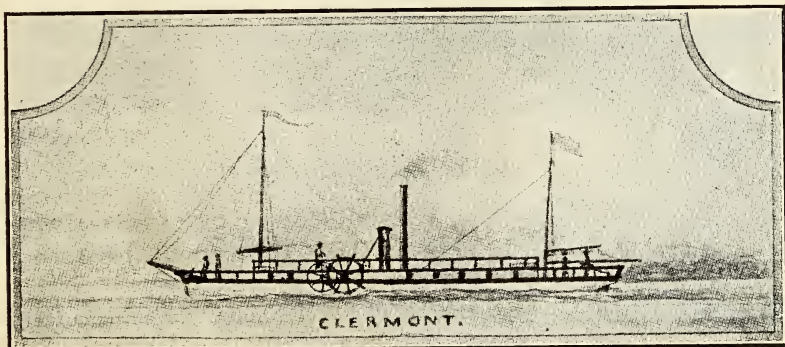
Growth of Size of Ocean Vessels in One Hundred Years

The smallest vessel in the group is the *Dreadnaught*, a clipper ship dating from the beginning of the nineteenth century. Then follow the *Borussia*, a side wheeler; the *Britannia*, *Arizona*, *Oceanic*, first greyhounds, and the *Vaterland*.

FIG. 20¹

FROM SAILING VESSELS TO STEAMSHIPS

In the past fifty years shipping has almost entirely changed from sailing vessels to steamships. The first really great steamships began to plow the oceans about 1835. From that time until now sails have rapidly given way to steam engines as the means of propelling ocean-going vessels.



In 1807 Robert Fulton ran the *Clermont* up the Hudson River from New York City to Albany.

FIG. 21²

Do you want to see a moving picture of the progress of ocean vessels in one hundred years? Look at Fig. 20. It shows how our ocean-going ships have grown from the little dreadnaught or clipper ship at the beginning of

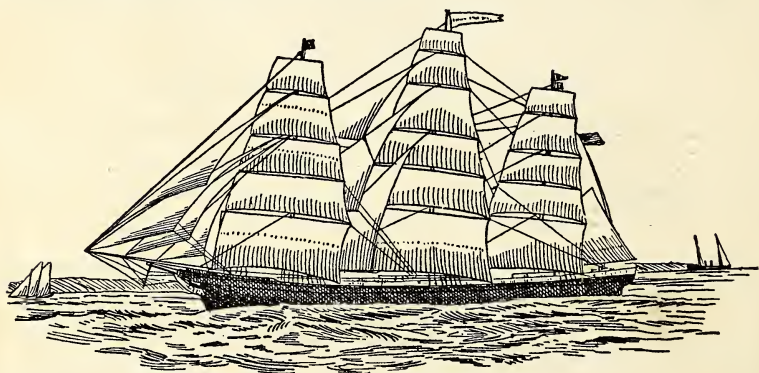
¹ Johnston E. R.: "Ocean Transportation"

² Dunbar, S.: "A History of Travel in America." Bobbs-Merrill Co., Indianapolis.

the 1800s to the great German *Vaterland* and, 54,282 tons in weight. This is now owned by the United States and is called the *Leviathan*. It is 907 feet long and has a crew of 1234 men.

And only a hundred years ago, in 1807, the first commercially successful river steamboat was run on the Hudson River. Fig. 21 shows how it looked.

Earlier than this John Fitch and other inventors had worked for twenty years trying to find a way to propel boats by paddles which could be operated by steam engine, but it was not until thirty years after the *Clermont's* first trip that people were sure the steamboat could be used with commercial success in crossing the ocean. In 1819 the *Savannah*, a sailing packet of 380 tons, was equipped with an engine and paddle wheels and actually crossed the Atlantic from Savannah, Georgia to Liverpool in 25 days; but in only 18 days out of the 25 could her engine be used. Even in 1819 people dared not go out on the ocean without sails. It was not until 1833 that a vessel crossed the ocean all the way under steam power. This was the *Royal William* and made the trip from Quebec.



A Clipper Ship

FIG. 22¹

Up to 1840 the clipper ships, or so-called square-rigged vessels, were the great ocean-going freighters. Fig. 22 shows the largest clipper ship ever constructed.

This was called *The Great Republic*. Even today it would be regarded as a large vessel. It was 335 feet long, 53 feet wide, and 38 feet deep, had four decks, four masts, and carried 4555 tons of freight.

But after 1840 the importance of the sailing vessel in ocean-going traffic decreased rapidly. By 1914 seventy-one per cent of all the American vessels engaged in foreign trade were steamships. The greatest change came between 1900 and 1914. Not until 1893 were there more steamers in the world than there were sailing vessels, at least according to the freight that they could carry. From 1893 to 1916 the steam tonnage had increased 100

¹ Johnston, E. R.; "Ocean Transportation."

per cent while the sail tonnage had actually decreased. At the present time ninety per cent of the shipping of the whole world is done in vessels run by steam power.

STEAMSHIPS MUST HAVE COALING STATIONS

Do you see now that any country like England or America which has many ships must also have places scattered about through the different oceans where her ships can put into land and get supplies of fuel? Steamships until very recently—some of them burn oil now—have always burned coal, and naturally England's leaders quickly saw that they must have supplies of coal on hand in the South Pacific, in the South Atlantic, near Central America, in the Mediterranean, in the Indian Ocean, near Australia. Otherwise their vessels would run short of fuel and get stranded in mid-ocean, for you see one vessel could not carry enough coal to last the whole trip. If it did, there would be no space left for freight. So during the 1890s as their sailing vessels were gradually replaced by steam vessels, England's leaders planned very carefully ways of securing control of islands and important points scattered about at proper places over the earth, not too far apart.

Of course one of the chief reasons why the world's shipping routes seem to revolve so much about England is her excellent location. She stands right in the center of the path where trade must go in order to reach the northern European countries. Ships cannot reach France, Belgium, Holland, Denmark, Sweden, Norway, or Germany without passing close to England's ports. With the great producing and manufacturing continent of Europe so near, her happy location off its western coast has had much to do with England's becoming one of the great industrial powers of the world. We should not forget this fact of favorable location in thinking about England's supremacy in industry and shipping. Now turn to Fig. 13 again and see how well she is provided for in the way of coaling stations.

Do you see how Great Britain has carefully planned year by year that her colonies as they grow shall be tied closer and closer together, and do you see how the "tie that binds" is ships—and bases where the ships can get coal and oil to burn in their engines?

MAP EXERCISE

1. Do you know where the large shipping centers of the world are located?

On the wall map in your class room see if you can locate each of the following great centers of trade: London, New York, Hongkong, Bombay, Melbourne, Wellington, Liverpool, Rio de Janeiro, Buenos Aires, Boston, Sydney, Halifax, Gibraltar, Queenstown, Port Said, Calcutta, Cape Town, Aden, Philadelphia, Osaka, Shanghai, Panama, Galveston, Yokahama, San Francisco, Naples, Honolulu, Manilla, Seattle, Marseilles, Constantinople, Brest, Singapore.

On a blank world map letter in at the exact locations each of the foregoing shipping centers.

Exchange papers with a neighbor. Open your geography to a map of Europe. Now correct your neighbor's map by comparing his or her work with the geography map, and on the left margin write the name of each port which was located incorrectly. The teacher will pass around and check up the correction of the maps. After she has done this, return the paper to the one who made it.

As a result of this test, you now know which ports you need to study in order to be able to place all of them accurately. How many got all right? Those who located all the ports correctly do not need to do the next exercise; they can spend their time on other work.

First step: Open your geography to the same map as before. Study very carefully the location of the ports you missed. Try to fix each one in your mind with relation to other places—bodies of water or other ports. See what direction it is and about how far from some place of which you know the location.

Second step: Now close your eyes and try to see its position.

Third step: Open your eyes and see if your mind-picture was right. If not, close your eyes again. See if it is clearer than before. Look again at the map and repeat the process until you are sure you can locate the port accurately.

Fourth step: Close the geography, and on the clean mimeographed map write down the name of the port in its proper place. When you have finished, compare your work with the geography map. If it is incorrect this time, you must go through the whole process again, and again, until you succeed in getting it right.

Fifth step: Do this for all the ports you missed in your test.

Sixth step: Bind the two test maps into your notebook for safekeeping. In about a week we will repeat this test to see if you can remember all the ports correctly.

2. The Chief Shipping Routes of the World.

Using the same world map on which you have located the chief ports, trace carefully the ten most important shipping routes of the world. You will find suggestions in Fig. 19. Try to invent new ways of showing where the heaviest freight shipping routes are.

DEBATE

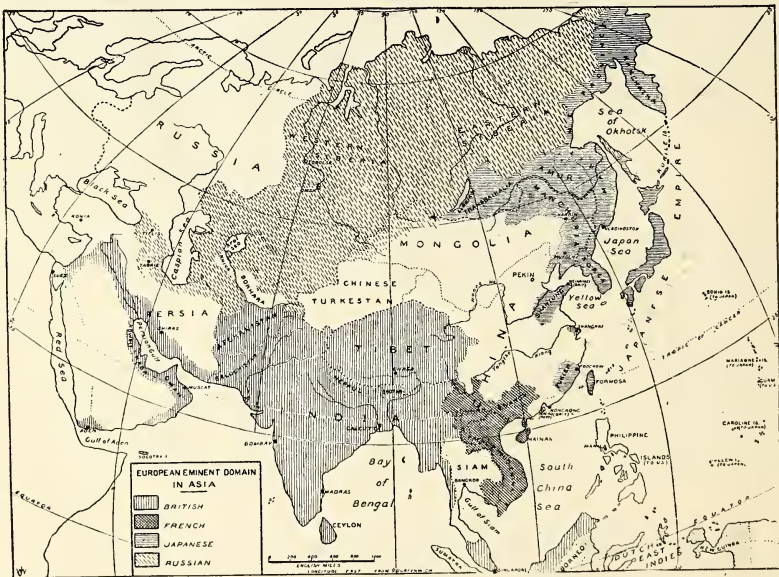
DEBATE ON THE QUESTION: RESOLVED THAT THE UNITED STATES WOULD SUFFER MORE THAN ENGLAND IF OTHER COUNTRIES REFUSED TO TRADE WITH HER.

To the Teacher: Now that the essential facts have been reviewed concerning the needs and resources of the United States and England, we suggest that one or two class exercises be spent on a debate on the question: *Resolved, that the United States would suffer more than the British Isles if other nations should refuse to trade with her.* Perhaps it would be wise to spend one day in discussing with the class what the question involves, in assigning parts of the work of collecting facts and organizing them, and in preparing the presentation. We suggest that you use as large a number of the pupils in the class as possible. Have them select leaders and choose the respective teams. So far as possible let the leaders and the teams decide for themselves how the work will be divided up. We suggest that you have a series of two-minute talks and a rebuttal from one or two leaders on each side, and perhaps a longer rebuttal from one or two other leaders on each side. It might be wise to use certain members of the class to act as judges. These are suggestions to aid you in organizing the debate.

III. RUSSIA, A WORLD POWER—HER TOWNS AND CITIES STARVING!

Do you know which country that fought against Germany in the World War was the largest? Was it England? the United States? France? Italy? Serbia? Does it surprise you to be told that it was no one of these? Russia was the largest country, and she threw more millions of men onto a long 2000-mile battle-front than any other country on either side.

Russia—what does the word mean to you? Does it mean a cold, bleak, mysterious far-away land? Do you think of Siberia with its exiles and icy



Europe's Eminent Domain
FIG. 23¹

fields, and the terrible hardships of its prisons and mines that we read about in stories of "darkest Russia"? Or, do you think of the dashing Cossacks who have become famous in military history for their striking costumes and reckless daring? Do you think of imperial rulers and Tsars? What does Russia mean to you?

It is very important to answer these questions for a number of reasons. For one, Russia was regarded as Germany's most important enemy in 1914. Her territory was broader than that of any imperial country of the world.

¹ From Gibbons, H. A., "The New Map of Asia". By permission of publishers, The Century Co.

What startling proof of this statement one finds in Fig. 23! Russia, we must remember, consists of two parts: the smaller part—about two thirds as large as the United States—is in Europe; by far the larger part lies in far-off Asia. The map shows that the Asiatic part of Russia is more than twice as large as the European part. At one time, when Russia controlled Manchuria and Kamchatka it was practically three times as large. What a stupendous stretch of territory to be acquired by a single nation! On the wall map of the world compare the size of Russia with that of the United States. Do you agree with the statement that was made about the sizes of these two countries? Find China on the map of Asia. It includes Mongolia, Tibet, and Chinese Turkestan. Which is larger, Russian Asia or Chinese Asia? Do you see what a tremendous country Russia is? We will learn as we go on with our study of Russia, how a great deal of this Asiatic Russia has been secured by her since 1800, for Russia like England was imperial. She too became master of more and more land, and gradually she spread through eastern Europe until she extended from the cold Baltic Sea on the north to the warm Black and Caspian Seas on the south. Through the thousand years of time from the founding of Russia to 1800, ruler after ruler was endeavoring to make a unified European empire with all the power centralized at Moscow and St. Petersburg.

But after 1800, as England and France and other nations extended their power into other lands—Asia, Africa, South America—Russia started on a sensational march across the cold northland of Asia, and by the time the World War opened, the territory of Russia extended continuously more miles than that of any other nation in the world. In this way she was very different from England with her central power located on an island thousands of miles from her colonies and dependencies—South Africa, Australia, India, and the others.

RUSSIA'S PEOPLE

What about Russia's people? Were there many in this huge country? How many do you guess? 30 million like England? 60 million like Germany? Or 100 million like America? No, even more than any of these. China and India were the only countries in 1914 that had a larger population than Russia, for she had 140 million people.

Study the population map of Fig. 3. Glance again at heavily dotted England and her dependency India, and at the very densely populated region of the eastern coast of the United States. How does Russia compare? What does the Russian part of this population map tell you? Are people huddled together as they are in England, in India, in New York, New Jersey, and Massachusetts? The first bar graph below the map shows how many people are living per square mile in different countries. How much more crowded

are the people generally in Russia than in the United States? Recall what we found about the comparative sizes of the two countries. How much more crowded are China and India than Russia? the United States?

HOW DOES RUSSIA FEED HER MILLIONS?

In studying England, did we find that if the other nations declared a trade embargo against her they could starve her? Did we find that the United States could be starved in such fashion? What about this mammoth Russia extending over two continents, with more people than any other European nation? If all the countries of the world should refuse to trade with her, could they starve her? You know now from having studied the various food maps how this important question can be answered. Turn back over them from one to another, and try to decide definitely what kinds of food Russia raises most of. The United States we found did not specialize in any one food. Wheat, corn, cattle—with these great staples America amply provides herself. Did we find this was true about England? No, far from it. Is it true of Russia? Is she a wheat-producing country? How does she rank with the other countries of the world in the amount of wheat she raises? Do you recall that the United States was one of the most important wheat countries? Is Russia more important?

Study the maps which show to what extent Russia raises corn, potatoes, and cattle—Figs. 6, 7, 9. Which of these three foods would you say Russia depended on most? Why do we speak of cattle as a food? Fig. 7 shows us some startling things about Russia as a potato-raising country. Would you have expected to find Russia raising so many more potatoes than the United States? No matter where one goes in America he finds potatoes—white potatoes and sweet potatoes—on the tables of working man and farmer, banker, merchant, manufacturer. Apparently Russia too is a great potato country. Would you say the same of Russia as regards corn? How about cattle? How do Russia and the United States compare in this respect?

TABLE VI.

Grain Exports from European Russia in 1914.

	Millions of poods ¹	Millions of roubles ²
Wheat	47.1	163.9
Rye	23.3	19.3
Barley	120.6	94.4
Oats	16.8	14.1
Maize	17.4	12.6
Other grain products	49.4	45.3
Total	274.6	349.6

¹ A pood is a measure of weight equal to about 40 pounds.

² A rouble is a little less than 50 cents in our money.

All of these maps show conditions in Russia as they were from 1911 to 1913. From your map studies are you ready now to answer the question, was Russia self-sufficient in those years? Did she stand on her own feet? Did she depend on others for food? If you need further help, Table VI will show you to what extent Russia actually exported food to other countries.

Fig. 5 supplies us with still more evidence concerning this matter for the great staple foodstuff, wheat. It compares the amount of wheat that Russia produced with the amount that she consumed. Do you notice that the bars on this graph are laid off to show how many bushels per person she produced and how many she consumed? Does this help you to answer the question whether Russia raised as much wheat as she needed for her own people? It is also important to notice whether Russia really was a great wheat-using country. How does she compare with the United States? with Canada?

What a fine feeling the rulers of Russia must have had in the years of 1911, 1912, and 1913 before the World War when they realized that they were raising more foodstuffs than their people used at home. She was an exporting country shipping food to other lands for which they were receiving gold in return.

RUSSIA—FARMER, NOT MANUFACTURER

Do you remember what we found out about England—that she was a great manufacturing nation and that only six per cent of her whole population were farmers? From what you have learned about Russia so far, would you think that she too was a manufacturing nation, or would you imagine that most of her people were farmers? What information do you get from

TABLE VII.

Countries	Per cent of population engaged in agriculture
Jugo-Slavia	88
Russia	72
France	40
Italy	35
England	6

Think of it! Almost three-fourths of more than 140 million people in Russia tilling the soil! What do you suppose the other 28 per cent were doing in those years about which we have been talking? When Russia comes to your mind, is it easy to think of many people living in towns and cities as they are in America or in England? We must get used to the idea, however, that long before America was even discovered, the people of the older countries of the world—such as China, India, Russia, Germany, England, France

—had begun to live in cities. Russia has cities that are several hundred years old. It is believed that there were rather fine Chinese cities 2000 years ago; so you will not be surprised to find that Russia has large cities.

RUSSIA'S TOWNS AND CITIES

Turn to a political map and locate each of the following cities: Moscow, Kiev, Petersburg, Odessa, Baku, Riga, and be ready to point these out to the class on a wall map. In the back of your geography you will find given the population of each of the cities of Russia along with the figures for the other countries of the world. Write in your notebook the population of each of these cities. When you have done this, write a list of the cities of Russia which are over 100,000 in population. How many such cities did you find? More than the six which we have just named? ten? twenty? Are you astonished to find how many cities there are in this far-away country of eastern Europe that we in America would regard as large ones?

Think of the city of Petersburg with more than 2 million people! What cities in this country have more than 2 million people? What are they? Have you been in either of them? Do you know how they spread out for miles and miles with broad paved streets and enormous office buildings and manufacturing plants, how hundreds of thousands of automobiles roll rapidly over their pavements? Have you been in the bustling department stores, in the great banks of America's largest and finest cities?

Well, if you have, you know much of what life was like in some of the best of Russian cities before the war—in Petersburg and Moscow, for instance. Petersburg was a great city created by one of Russia's rulers, Peter the Great, who lived about 1700. Because of a whim he had, he built it in a large swampy region at the mouth of the Neva River. The land here was so marshy that it all had to be filled in in order to build a city at all. Petersburg was a place of beautiful palaces, of very broad thoroughfares with fine shade trees bordering their sides. The streets were lined with busy shops, and traffic bustled over them as it does over our city streets. On the outskirts there were factories and thousands of homes to house the industrial people of the place.

Peter the Great was what we call a very "progressive" person. In order to make his country a great nation, he went out on long journeys to other lands to get ideas for improving his own country. Then when he came back he would set new fashions and make laws so that the people had to follow them. One of the customs of the men was to wear long beards that hung down over their bosoms, and though all but the priests wore their hair very short they took great care of their beards and were very proud of them. Peter, in order to change this custom, made a law that only priests and peasants could wear beards, and all others had to pay a tax of 100 roubles a year for the privilege of wearing one. Officials were stationed at the gates

of the towns to collect the tax. The people thought this was a sin, and many old Russians who shaved their beards saved them precious in order to have them placed in their coffins, for they feared that they wouldn't be allowed to enter heaven without them.

For the women he insisted upon English dress. He decided that women as well as men should be invited to entertainments, such as weddings and banquets, the same as in England and Holland, and that all these entertainments should end with concerts and dances. But only those should be admitted who were dressed in English costumes.

Peter extended his ideas to education and to making beautiful cities, especially to making Petersburg a beautiful place. Now hundreds of years later, it is a city of magnificent buildings. How attractive it is shown to be in the picture of Fig. 24, and how much in fact like the cities of other modern nations.



A scene in Petersburg

FIG. 24¹

We should not carry away the idea, however, that Russia has only one or two large cities. You have already discovered that she has 22 cities, each of more than 100,000 people. Now turn back again to the political map of Russia and compare it with one of the United States. Do you notice how differently situated the towns and cities of Russia are from those in the United States? The United States seems to have almost a continuous web of little communities scattered from the Atlantic plain clear to the Middle West. From the Mississippi west to the Pacific coast, however, the cities and towns are farther apart. The way they are scattered makes one think much more of Russian towns and cities than of the cities in the eastern part of our own country. There are many towns in Russia and many people living in

¹ From National Geographic Magazine.

them, but they are far apart. Have you studied enough about Russia to see clearly that she is a country of both farms and cities? True enough, three-fourths of her people are peasants, but we must not forget that she also has scores of towns and many large and modern cities. We would have found her very interesting to visit in the years we have described, and we would no doubt have been surprised to find that this country which we think of as very old was so modern and up-to-date. If we had visited Russia, we would have found many things which we should have liked to bring home, not merely to show our friends, but to own and use.

Suddenly a great prosperous country crashed. A nation which had been growing up for a thousand years turned from a dominant world power controlling more territory than any other country of Europe to a beggar asking for bread.

On March 8, 1922 these headlines appeared in one of our American magazines.

SIGN THE ROLL CALL

*From the depths of brave, frozen Russia
comes this most terrible of all cries*

**“WE STARVE”
WILL YOU ANSWER?**

The next two months will be the most crucial. Reports coming from Russia paint pitiful pictures. Every day 50,000 die of starvation! Mothers are drowning their children to silence their heart-rending cries for bread. The Russian steppes are literally covered with skeletons, the wasted bodies the prey of wolves. How many more shall die before YOU act?

Will You Sign the Roll Call?

Immense cargoes of food MUST be shipped AT ONCE to save the starving. If the powers of the world would grant Russia credit and re-establish trade with her, she could help herself in this awful crisis. Until credit is extended YOU MUST HELP. If you have helped before then you must help again, and still again! Those who help now will have aided Russia in her DIREST NEED.

SIGN THE ROLL CALL! GIVE!

Can you imagine it! Can you see how such a thing could possibly be true? How could this nation with its prosperous cities, and its enormous fields and all the 140 million people it had to do the work, come to the point of starvation.

Why just look at Table VI. and recall how she had much more food than she wanted and was even sending it to other nations. Think of what the maps show—the quantities of wheat and potatoes and sheep and cattle she raised. Russia is a world power. Yet she is on her knees begging for bread. The people of her towns and cities are starving! 50,000 dying each day of starvation. "Immense cargoes of food needed at once to save the starving", say the headlines. How in the space of so few years could such a change have been brought about in a modern western nation? Well, in the case of Russia there are four reasons.

First Reason: WAR AND DROUGHT

In 1914 Europeans stopped practically everything and went to war with each other. They had to leave their farms and their factories and their shops and go to war, a terrible world-wide conflict against Germany, Austria, and their allies. From the fields in Russia, where millions of men, women, and children had been tilling the land, the strong, able-bodied youth went forth to fight the best youth of other nations. *War always takes the ablest and leaves the weaker ones to continue to provide the food and necessities of life.*

In England when the war came and the men went away, the women and children went into the fields and for the first time did the work of the farms, went into the offices, ran elevators, and became street-car conductors. Men too old to fight, women who had never worked at anything, those of the wealthy class, all tried to do something to help. But in Russia it was different, for women had always worked and helped to raise the food. This is an important difference between English-speaking nations and Slavic ones. But you see that while England had labor to draw on which in some measure could fill the places of those who had gone, Russia had none; her workers were simply reduced by the number who went to war. What applied to the farms applied to the towns and cities as well. Men went from all trades and occupations and left the old and weak, and the women and children, to do the work that millions of strong men had helped to do before. And those who were not actually sent to the trenches were taken from their peace-time work and put to making guns and shells and bayonets and trucks and other implements with which to destroy civilization. From work that made for peace and comfort, they went into the business of making instruments to destroy human life and the products of human effort.

Not only were the men taken away from the fields, but horses and other farm animals were seized for war work. This put a still greater burden upon

the farmers who were left to provide the foodstuffs for the armies as well as for the home folks, for they depend upon horses to do a great many things we do by machines. Between 1914 and 1921 the number of horses in Russia decreased one-sixth.

To make matters worse, after the war had gone on nearly four years the people of the towns and cities started a terrible revolution. The Tsar's government was overthrown, and disorder and suffering reigned everywhere. Factories practically stopped running, the shops of the cities closed. The railroads were allowed to run down because equipment could not be repaired or replaced. Other countries fearful that the revolution would spread outside of Russia refused to trade with her. Nothing could be brought in from the outside—neither machines to help do her farming, nor locomotives, nor cars, nor rails for her railroads, no coal to run her manufacturing plants.

1920—THE YEAR OF THE TERRIBLE DROUGHT

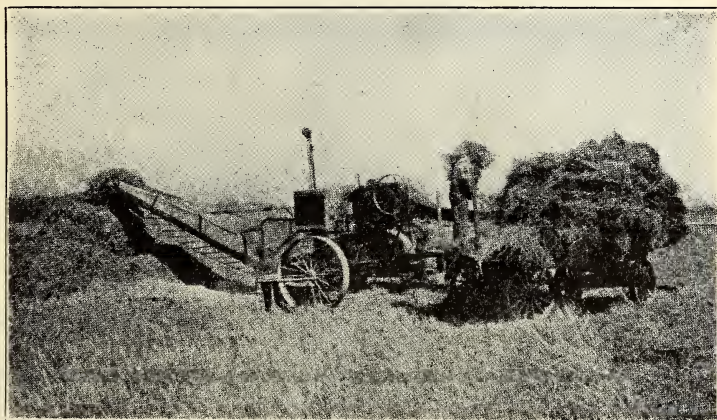
What do you suppose was added to the other burdens of the Russians in 1920? As if the fearful war and the disorder of revolution were not enough, these farming people had to endure the worst drought that the country had had in many years. The whole great region around the Volga River was affected by it.

Do you realize what a drought means to farmers? It means that the amount of rain that falls is very much less than in normal times; the heat becomes very intense, and for days upon days there is no relief from it. What little water there is in the ground dries out very quickly, and the soil becomes parched and dry—so much so that the fields look as though they had been burned off. The wheat soon dries up and becomes of little value. You can well imagine the worried faces of the Russian farmers when they realized that the disaster of a drought was upon them. Just at the time when they needed every bushel of wheat they could get, and more than they had ever needed before, the fields became so dry that the grain was either all gone or scarcely worth cutting. In places where the need was most desperate, the farmers cut the plants carefully one by one, and the few grains of wheat, rye, or barley that they bore were painstakingly harvested.

Second Reason: FARMING BY HAND INSTEAD OF BY MACHINE

Russia crashed, but the United States, another great and prosperous country, went through the stress and strain of the war and didn't crash. The American people, too, left the fields and the peace-time factories and threw themselves into the conflict across the seas—millions of them, and yet the United States did not become a starving nation. Indeed she kept her people almost as well fed and as comfortable as they had been prior to the war. As a matter of fact, the farmers were more prosperous than they had ever been in the history of our country. You noticed how almost suddenly they began

coming into town honking automobile horns instead of riding slowly behind their old grey mares as they had done before. They dressed better, they got new machinery for their farms, bought victrolas, and pianos, and treated themselves to other luxuries they had not been able to afford before the war. Then of course hundreds of millionaires sprang up all over the country, until "a million dollars" didn't sound like nearly as much as it used to. But besides keeping our own people so well taken care of, the United States sent enormous supplies of wheat, corn, and other foods to the countries of Europe.



A power threshing machine doing the work of hundreds of farmers such as are shown in the next picture.

FIG. 25¹

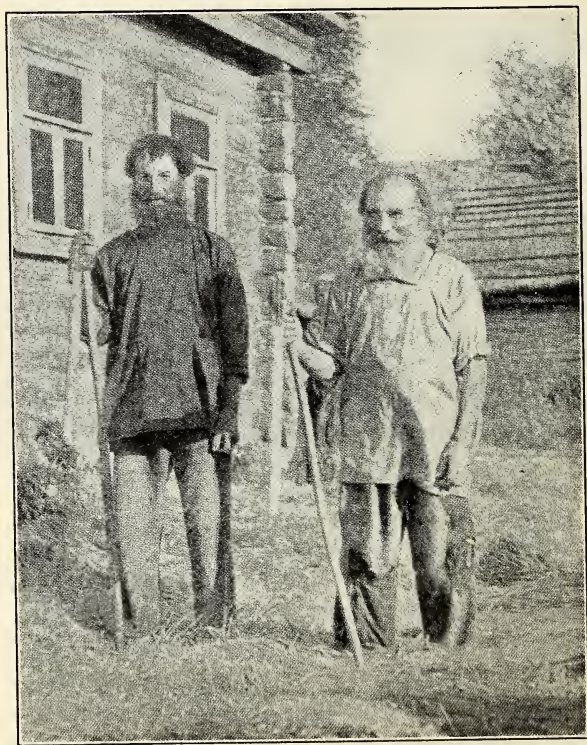
She raised 18 billion dollars for her allies and sent a tremendous army of men across the seas to help them win the war. Of course we did have to get along on a little sugar, and we did use brown bread somewhat in place of white, but such "goings-without" were fun compared to the ways the French, Germans, Austrians, Italians, and Slavs felt the pinch of the war.

What do you think was the secret of our being able to meet the emergency of war so much better than Russia was? Was it that we had always shipped so much more grain to other countries? Turn back to Fig. 5 and see if that was true of wheat. Compare the difference in the production and consumption bars of the two countries. You see they are about the same.

No, it was not that. The big reason was in the way we farmed. When you look at the next two pictures, you don't find it difficult to believe, do you, that one American farmer could raise as much as thirty Russian farmers? Do the pictures show you why? Throughout the vast country of Russia very few machines are used on the farms. You can travel hundreds of miles over the Russian farms of the Volga region without seeing a threshing machine such as that shown in Fig. 25. Instead, the grains of wheat are

¹ From International Harvester Co.

laboriously beaten out with crude implements like those in the hands of the two "smocked" Russians of the picture. Thousands of Ukrainian peasants plow their rich soil with home-made plows that just stir the top of the ground, much in the same way as our pioneer forefathers did a few years ago on our great middle western plains. They sow, reap, and thresh by hand, and when market time comes in the autumn they may be seen slowly hauling their crops to the villages and towns in such carts as the one shown in Fig. 27.



Russian peasants with "flails" with which grain is "threshed".

FIG. 26¹

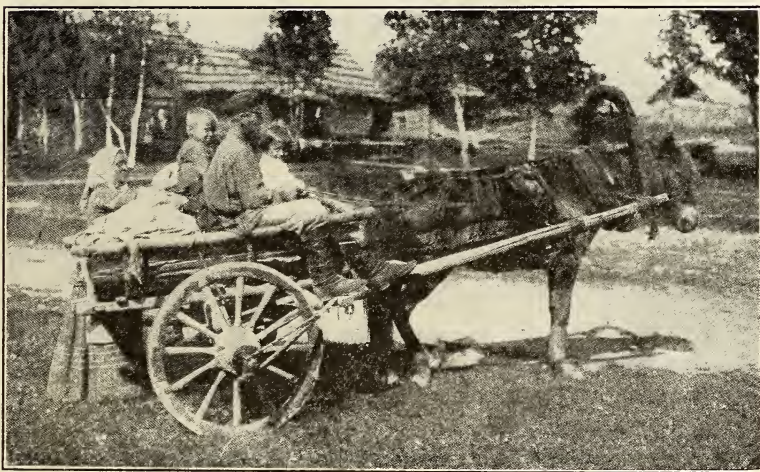
Evidently the machine age has not yet hit all parts of eastern Europe. Can you find the farmer's brake in the picture? Do you imagine the cart was made by the International Harvester Company? Which would you rather have to haul your wheat to market, a cart like this one or a Ford truck? It is such differences as these that account for Russia's inability to meet the emergency of the world war. The peasant with the cart probably takes a whole day to go into town and back and carries only a very small load. An American farmer using a gasoline truck can carry ten to twenty times as much and go and come from the local grain elevator in an hour or two.

¹ From National Geographic Magazine

Think how many times as much he could carry in a day if he had it. Of course what the Russian farmer could raise wouldn't keep the American farmer busy long; but on the other hand it takes the Russian away many days when he should be working in the field itself.

If you have any doubt about which method of farming is the better, read this comparison of what was done at the Paris Exposition more than a half century ago.

At that time threshing machines of the very crudest type were just being manufactured for the first time. In order to prove to the doubting farmers of the world who were doing just as their great grandfathers had done before them—that is, beating the grain out by hand—a contest was held. Six men using hand flails threshed 60 liters of wheat in a half hour. One American using a machine threshed 740 liters in the same time. And that was in the early days of invention, over fifty years ago.



Typical of the way farmers take things to market in Russia

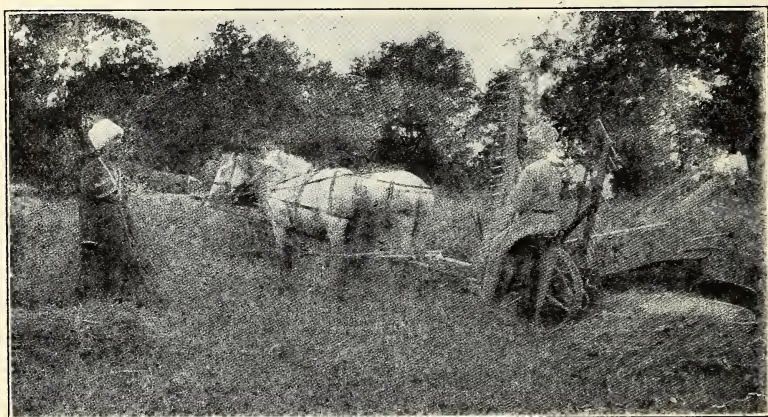
FIG 27¹

Imagine such a contest now with all the great improvements in machinery and with progressive farmers enthusiastic and intelligent in the use of machines. What enormous savings have been brought about in modern countries by the substitution of machines for hand implements. One man has estimated that the use of threshing machines in two Ohio counties saves each year the labor of 40,000 men. If this is correct you can get some rough notion of what saving would be brought about in Russia where 72 per cent of a nation of 140 million people are engaged in farming. Would you say,

¹ From National Geographic Magazine.

then, that the Russians are up to date like the Germans, the English, the Canadians, the Austrailians? See if you can find any farm pictures of these countries to compare with the Russian pictures.

You should not carry away the idea, however, that all Russian peasants farm by hand. For some years there have been a few modern machines in Russia—a small number of tractors, reapers, threshers, and so on. The picture of Fig. 28 illustrates this very interestingly. It not only shows the machine, but the curious garb of the peasant and his beard which is still the



A few of the great estates of Russia have used agricultural machines. Only a few however.

FIG. 28

fashion over there. Since they know about our machines in Russia, why don't they all use them, you may ask. The answer is that only the landlords of great estates could afford to buy them. Remember that before the Revolution the work of farming the lords' lands was done in the main by peasants who received no pay for their labor. This meant very large incomes for the lords, and they could therefore afford to buy machines. As these rich landlords learned more about the way Americans were making huge profits by using machinery, they gradually imported it for their farms. But even in 1914 the use of such implements and machines was very limited and the Russian ways were still in sharp contrast to American ways.

THE LAY OF THE LAND IN RUSSIA

Naturally, the ability of a country to be independent of other nations depends a good deal upon the kind of country it is—whether the soil is fertile, whether there are great agricultural plains, or whether the territory is broken up by high mountain ranges; whether there are plenty of rivers, or whether the land is dry and subject to droughts.

What about Russia? Is her soil rich and fertile as in China and in many parts of the United States? Or, is Russia icy like Greenland and Labrador? Do great mountain ranges break into the broad plains as do the Rockies and Appalachians in America?

Find a physical map of Europe in your geography. From the north run your eye down over the different regions included within European Russia. Would you expect large farms in the northern regions, those marked "Arctic Plains"? There must be a very large area around Archangel north and east in which it would be almost impossible to raise wheat or corn or such food. This land near the Arctic Ocean is like the land of the Eskimos; it has almost no trade and is frozen most of the year. Even in its best seasons it is covered only with grass and moss. When the short summertime comes, the ground thaws out a few inches, occasionally even a foot or two, but it never gets thoroughly fallow so that crops can be planted and harvested. A few flowers and sometimes grassy plots thrive in this region on the long summer days. We call these level frozen areas that have no tress "tundras". You have all heard of the land of the reindeer. Well, this land of the "tundras" is the land of the reindeer people.

Study this same region on the population map, Fig. 3. Do you find many people living there? Is it because they don't like the cold—because it is hard to keep warm? Just what is it?

Now move south in your study of the map from the icy region of the north to the forested region of the Valdai Hills and the Ural Mountains. This is the place of one of Russia's enormous resources. The immense forests of this mountainous country make us think very much of our own great forested regions in the northwest. They remind us of our forests, too, because we know that the Russians have wasted theirs just as we Americans have wasted ours. The forests of European Russia alone cover a territory of 474 millions of acres. If Poland, which was a part of Russia before the war, and the Caucasus are included, the total forested area is 550 millions.

Do you think from your study of the physical map that Russia could raise crops in this northern country?

Now what about the central and southern portion of European Russia? Do you notice that it is nearly all level country? The southern half of Russia is very unlike the United States in this respect. In fact, no other country in the world can begin to approach Russia in the amount of its level land. The Ural Mountains and the Valdai Hills, to which we have referred, on the north, and the Caucasus on the South are the only hills of any extent on this whole wide country.

Furthermore, this land is very fertile indeed. Turn to your wheat map, Fig. 4, and see where Russia's large quantities of wheat are raised.

This large section of land running across southern Russia from the Carpathian Mountains to the Urals is a well-known farming district that is sometimes called the Black Mold region. The soil is as black as coal when it is wet because of a rich vegetable mold that has collected over it slowly through thousands of years. Do you know it is estimated that in some places this mold may be 10 to 20 feet deep?

This whole southern section is called Ukrainia, and the people who live in it are called "Little Russians." Those who live in the region of Moscow and Petersburg are called "Great Russians." During the last three or four years—since the Revolution—many of the people of Ukrainia have thought a great deal about becoming independent of Russia, and they have even worked toward it. Do you think the "Great Russians" would want this to happen? Would European Russia ever be an exporter of wheat again if it did happen? Do you think in such an event Russia would be able even to supply her own people with food?

Third Reason: SMALL FARMS IN RUSSIA

Do you agree now that one real reason why America could feed the world in a great crisis, at the same time taking good care of her own people, was her extensive use of machinery? As you go on with your studies, you will learn much more about the marvellous industrial developments in America in the past seventy-five years.

The fact that Russia uses little machinery is closely related to the way her land is owned and passed on from father to son. The Russian peasant is a land-holder, true enough, but he farms in a very different way from the American farmer. His farm, instead of being in one big plot of ground as the farms in this country are, is divided into strips, or oblongs, which are scattered about over the village with neighbors' lots between them. The adjoining patches are sometimes planted with the same crop, but more often they are not, so that the hillsides frequently give the effect of a patchwork quilt with their many shades of green and brown.

A traveler journeying through the farm lands of Europe for the first time wrote:

"I have counted thirty men ploughing at the same time, each working his share of the same big, unbroken field,—open, for each man's share is marked, not by Hedge, fence or wall, but only by a furrow some thirty centimeters (or about a foot) wide, which must not be planted. It is said, and I believe the case has actually occurred, that the strips are sometimes so narrow that a man must walk on his neighbor's land to lead the plough-horse on his own. You may follow such a strip with the eye, over hollow and swell, till it disappears over the last ridge in sight. When land is divided, for instance among sons, each strip is generally split lengthwise to insure

equality. Otherwise one might get the sunny slope and the rich hollow, another the cold slope and a poor bit of sandy soil. Thus the strips get ever narrower. This system is wasteful in every way. First, it is wasteful of land. Where the holdings are in strips only seven meters (22 feet) wide, the boundary furrows take up nearly a tenth of the land (8.6 per cent). Moreover, the strips being straight, if a field happens not to be rectangular, awkward corners are left which must be laboriously worked by hand. It is wasteful of time, for a man has to travel all over the crazy quilt of the township to work his many scattered bits of land.”¹

The Russians have the custom of dividing up the land of the parent among all the sons, giving a strip to each one. If the peasant has several plots of ground in different places, each son gets a share of each plot because some parts of the land may be better than others and they must all share alike. You can easily see how this constant subdividing of farms would reduce the amount held by any one person. As a result, the average size of the peasant's farm throughout Russia today is about 8 acres. Have you any idea how large the common run of American farms are? Actually almost ten times as large—78.6 acres is the average size of American farms.

HOW AMERICAN FARM LAND IS DIVIDED

Do you know how farm land in your own country is divided? Are American farms arranged in long irregular narrow strips like those of the Slavic people? No, quite differently. Years ago when the American Government was planning how the new lands of Illinois, Iowa, Kansas, and near-by states should be divided up, it sent its surveyors to mark out important boundaries all over that region. There were no wire or rail fences or stone walls then as there are today; the land was all continuous open prairie. So the surveyors went to work and staked out important lines east and west and north and south all through that part of the country. These were called “principal meridians”. Running parallel with them and 36 miles apart, other lines were marked out very carefully, and stone posts topped with iron points were sunk deep into the ground to mark the place where certain lands began and ended. Between these 36-mile lines they laid out townships. These were usually six miles square, so that each township contained about 36 square miles of land. The township, in turn, was divided into smaller plots from which the farms themselves were made. We often speak of a “section of land”. This is 640 acres. The sections are divided into halves, quarters, and eighths, and it is very common for a farmer in selling land to divide it up into units of 80 acres. In fact, 80 acres is one of the most common units in our country today. Compare this unit with the 78.6 acres which we said was the average size of the American farm.

¹ Balch, Emily. “Our Slavic Fellow Citizens,” Russell Sage Foundation.

Do you know how much an acre is? Can you think of any piece of ground which is said to be an acre in size? If you live in a city like Chicago or New York, it will help you to think of a city block as about four acres. At any rate you see the Russian farm is only about twice as large as a city block. Imagine calling yourself a farmer with a little plot of ground the size of two city blocks and scattered around in different places at that—and with no other way to make a living for yourself and family. Then think of the American farmer with ten times as much land.

What do you think now of the progressiveness of these different peoples that we are studying? Is the way that the peasants farm, the use they make of machinery, the way the people do business, any indication of the amount of education they have? of whether a nation is an enlightened people or a backward people? Do you think that most of the Russian peasants have been much educated either in school or out? Of course in some parts of the United States we still find farmers using the old wooden plow, and the flail, and the scythe or cradle, but not to any large extent. Such things are almost a curiosity in this country, but you may run across them some time.

Later we shall learn more about the education of our people as compared with those of other nations, but when you try to account for a prosperous nation breaking down in an emergency, carry in mind the idea that the education of the people has something to do with it, in fact a great deal to do with it.

Fourth Reason: THE BREAK-DOWN OF TRANSPORTATION IN RUSSIA

Mrs. H. G. Wells, the famous English writer, went to Russia just two years ago, after the Revolution, to see if the stories that he had heard of the horrible conditions there were true. He found that the city of Petersburg which in 1914 had 1,200,000 people had in 1920 only 700,000. Imagine it! A great metropolis, capital of a nation of 140 million people, dwindling to half its size in just the space of two or three years. Mr. Wells tells us something about Petersburg. He tells us what the streets looked like in contrast to their bustling life of 1914.

"The shops have an utterly wretched and abandoned look; paint is peeling off, windows are cracked, some are broken and boarded up, some still display a few fly-blown relics of stock in the window, some have their windows covered with notices; the windows are growing dim, the fixtures have gathered two years' dust. They are dead shops. They will never open again.

All the great bazaar-like markets are closed, too, in Petersburg now, in the desperate struggle to keep a public control of necessities and prevent the profiteer driving up the last vestiges of food to incredible prices. And this cessation of shops makes walking about the streets seem a silly sort of thing to do. Nobody 'walks about' any more. One realizes that a modern city is really nothing but long alleys of shops and restaurants and the like. Shut them up, and the meaning of a street has disappeared. People hurry past—a thin traffic compared with my memories of 1914. The electric street cars are still running and busy—until six o'clock. They are the only means of locomotion for ordinary people remaining in town—the last legacy of capitalist enterprise. They became free while we were in Petersburg. Previously there had been a charge of two or three roubles—the hundredth part of the price of an egg. Freeing them made little difference in their extreme congestion during the home-going hours. Every one scrambles on the tramcar. If there is no room inside you cluster outside. In the busy hours festoons of people hang outside by any handhold; people are frequently pushed off, and accidents are frequent. We saw a crowd collected round a child cut in half by a tramcar, and two people in the little circle in which we moved in Petersburg had broken their legs in tram-way accidents.

The roads along which these tramcars run are in a frightful condition. They have not been repaired for three or four years; they are full of holes like shell-holes, often two or three feet deep. Frost has eaten out great cavities, drains have collapsed, and people have torn up the wood pavement for fires. Only once did we see any attempt to repair the streets in Petrograd.

Every one is shabby; every one seems to be carrying bundles in both Petersburg and Moscow. To walk into some side street in the twilight and see nothing but ill-clad figures, all hurrying, all carrying loads, gives one an impression as though the entire population were setting out in flight. That impression is not altogether misleading. The Bolshevik statistics I have seen are perfectly frank and honest in the matter. The population of Petersburg has fallen from 1,200,000 to a little over 700,000, and it is still falling. Many of the people have returned to peasant life in the country, many have gone abroad, but hardship has taken an enormous toll of this city. The death-rate in Petersburg is over 81 per 1,000; formerly it was high among European cities at 22. The birth-rate of the underfed and profoundly depressed population is about 15. It was formerly about 30."

So this is what happens to cities in a country of very wide territory when war or some other great crisis comes. The stretches of land in Russia are very great—much greater than other countries of Europe. Do you recall that European Russia was almost as large as the United States? Turn to a map in your geography which shows the cities and railroads of Russia. Do

you notice how far apart the towns and cities seem to be? Now turn to a similar map of the United States. We have so many more towns and cities—literally hundreds of them—and, except in the western part of our country, they are much closer together.

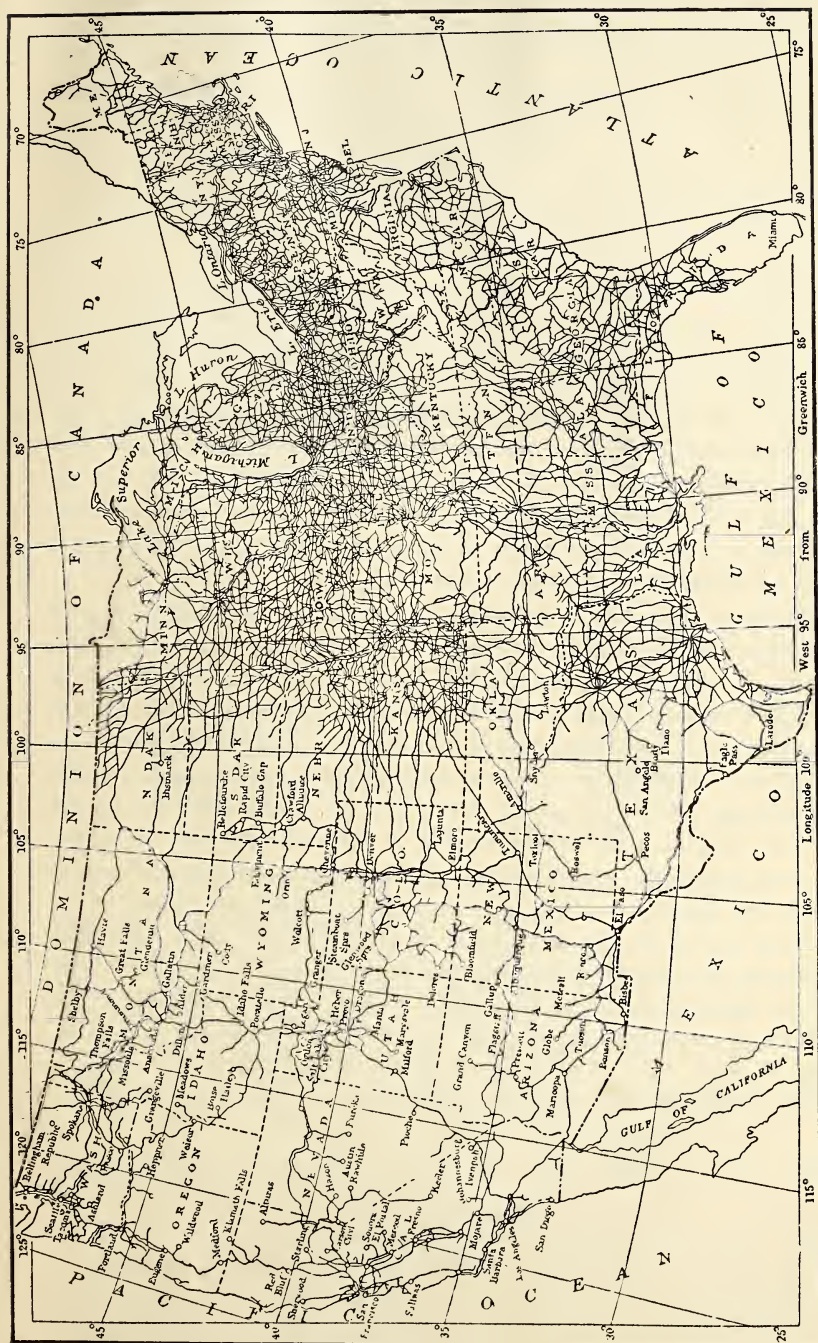
Now we have already learned that people in the cities are not able to raise food with which to keep themselves alive. They depend upon the farmers in the country. In Russia, as in the United States, the farmers near the towns and cities drive in with their produce, and so little towns and villages rarely have trouble in getting enough food. During the years just after the War and the Revolution, 1918, 1919, 1920, when it was so hard to get food and when the terrible drought added to the difficulty, we must remember that even the peasants starved. There was a large famine area in the southern part of Russia which in 1919 extended over 4622 dessiatines (about 12, 479 acres)¹. By 1920, however, the very year of the drought, this had slowly decreased to 4227 dessiatines; and by 1921, when the government had learned how to distribute food a little better, to 3056 dessiatines. So do not be misled into thinking that all the peasants throughout Russia had no difficulty in getting food. The fact is, however, that by and large the farmers of Russia have been better off since the land was divided up after the Revolution in 1917 than they were before.

No doubt you are wondering why the peasants did not divide up their food with the cities. Well they did, so far as they could. During 1920 and 1921, and no doubt even today, every railroad train that passed through a town or village was met by peasants eager to sell food. Stories are told by returning travelers that that is the only way the people in many of the cities have to get food; and we must remember, too, that the peasants near enough to the cities and towns peddle food much as they did before the war and as our truck gardeners do here today. Of course in Petersburg and Moscow the Soviet Government tried to collect all this food and redistribute it themselves among the people.

Why, then, if the peasants were raising food and wanted to help feed was no way to get the food in quantities to the large cities. They were far apart and the huge amounts needed could only be transported by railroads. And do you know that since 1914 the railroads of Russia, few and far between as they were, have simply gone to pieces?

"Few and far between!" Look again at your geography map which shows the railroads of Russia. Do you notice how they consist only of a few great trunk lines running from the larger cities north, south, east, and west? How like the center of a web Moscow is! Eight large railroad lines radiate from her like the spokes from the hub of a wheel. Remember that Moscow for a long time was the capital of Russia. Make notes of the other large cities through which these trunk lines go.

¹ A dessiatine is about 2.7 acres.



From Johnson, E. R., and Van Metre, T. W.: "Principles of Railroad Transportation." D. Appleton & Co.

MAP OF THE RAILROADS IN THE UNITED STATES IN 1910

Notice how the railroads of the United States center near Chicago. It is said that half the people of the country can leave home in the evening and arrive in Chicago in the morning. Twenty-eight great railroad lines enter this city.

FIG. 29

Now compare this map with the railroad map of the United States given in Fig. 29. What a vast difference in the intricacy of the network of lines. Our railroads too are based on great trunk lines—the New York Central and the Pennsylvania running from New York to Chicago, with branch lines to other points; the New York, New Haven, New Hartford tying New England to the country west of the Hudson River; the Chesapeake & Ohio tying the eastern coast to the central plains; the Great Northern and the Northern Pacific making neighbors of Seattle, Minneapolis, and Chicago. The Santa Fe, the Union Pacific, and the Southern Pacific do a like service for San Francisco, Denver, Omaha, St. Louis, Kansas City, Chicago, and other places. But there is a great difference between our railroads and the Russian railroads. Our railroads were built originally, most of them at least, by people who needed transportation service to connect their towns with other nearby towns. In the main, this meant that practically every community of any size in America was connected with others near it, and then the trunk lines developed out of these smaller railroads. So you see the smaller links of railroad came first and the larger ones tied them together later. Now it is possible for people to travel or to ship goods from almost any town or village in our country to any other.

What about the miles of railroads in Russia and the United States? How do you think they compare in number? In 1919 America had 263,707; on January 1, 1921 Russia had 29,909 miles. Remember that European Russia is two-thirds as large as the United States and that before 1920 it had more people—140 million against 106 million. This means that for a country of such wide territory and so many cities Russia has a very small railroad mileage. How dangerous this is for the people who live in the cities. Just imagine what would happen if the railroads that bring the food to your city should stop running. Perhaps they have stopped running in the past few years so that you can remember a time when in your town there was no coal to be had and people, as in 1917-1918, had a hard time to keep warm. Do you see how important to the lives of the people in cities the smooth running of the transportation system is? It takes much less time for few to collapse than it does for many. So when the war came the few miles of railroad lines in Russia went to pieces very quickly. Practically all the industries of Russia broke down. Table VIII shows this clearly.

If you did not know what had taken place, you would probably guess it from a study of the things that Russians produced and made in 1913 and 1920. Just imagine! Only 90 locomotives produced in the entire country in 1920; 609 in 1913. Only one-fourth as much coal mined in 1920 as in 1913. Since the railroads cannot run without coal, do you see another excellent reason why the people starved? Of course you also see an excellent reason why in this cold country the coming on of winter is such a

dreaded event. When the wood blocks in the street pavements are torn up to make fires so that people can be warm and the very furniture of the house—ballustrades in the halls—every piece of wood that could be spared was used for fuel.

TABLE VIII

Can you see from this table how the industries of Russia broke down?

	1913	1920
Coal (thousand of poods)-----	1,738,409	406,499
Oil (thousands of poods)-----	564,300	233,900
Peat (thousands of poods)-----	95,000	92,803
Ores (thousands of poods)-----	638,400	10,400
Salt (thousands of poods)-----	121,822	37,256
Cast Iron (thousands of poods)-----	257,400	6,330
Copper (thousands of poods)-----	2,057	-----
Cement (thousands of barrels)-----	12,167	363
Bricks (thousands)-----	2,000,000	43,000
Locomotives-----	609	90
Trucks-----	20,492	854
Ploughs-----	667,000	88,838
Electric Machines, Dynamos, etc.---	678,000	36,700
Lamps (thousands)-----	2,564	258
Accumulators (poods)-----	207,748	25,924
Sulphuric Acid (poods)-----	7,688,128	691,387
Caustic Soda (poods)-----	2,633,875	2,532
Sulphates (poods)-----	3,821,880	662,066
Cotton Yarn (thousands of poods)---	16,000	825
Woollen Yarn (thousands of poods)---	2,400	560
Hides (thousands)-----	16,000	6,132
Paper (thousands of poods)-----	9,100	2,260
Sugar (thousands of poods)-----	82,806	5,542
Tobacco, (thousands of lbs.)-----	21,943	9,294

Perhaps you are thinking that as in America, the Russians would use automobile trucks to move the food from the country into the city. True, if they had them, but the plain fact is that they were not able to make them. Only 854 trucks were made in all Russia in 1920 compared to 20,000 in 1913. Furthermore, during the last three years the people of the world did not trade with Russia, so that trucks could not be shipped to them.

Do you see now why the people in the cities and towns of Russia starved when in many sections of the country not so far away from them the peasants had plenty?

EXERCISE

In your notebook make a summary in which you state the reasons why Russia, a world power in 1914, is helpless in 1922. Tell which reasons you think are the most important. State what lessons you think the American people can draw from what happened to Russia.

IV. CHINA: AN OLD CIVILIZATION, ITS RESOURCES UNDEVELOPED

Are there any Chinese people living in your city? Do you know any? What do they do for a living? Do they dress as our people do, or do they wear queer clothing?

Are there French people in your town? Germans? Italians? Do you see them more commonly than you do Chinese? Do you remember when you were studying about the many nationalities that make up America whether many of them came from China? Do you imagine that in China where these brown-skinned laundrymen come from all the people do the same kind of work? Do you think they wear pigtails there and have the same brown skins and queer slanting eyes? Perhaps the laundrymen you have seen in your town wear smocks. Do you think they all do this in far-off China? Do you think it is warm enough in China to wear such clothing all the year round? How do you imagine these people live? In great smoky cities, or in little hamlets and villages scattered over thousands of miles of sandy plains? Have you ever seen a Chinese driving an automobile in America? Do you imagine that in the towns and cities of China the streets have traffic policemen? Can you picture in the Chinese cities long lines of Fords and Cadillacs and Oaklands hurrying this way and that? When you think of China, do you see in your mind's eye enormous sky-scrappers, industrial cities, forty-two story buildings, clanging street-cars, great department stores, or do you see little farms with plodding tired Chinese men and women, plowing, sowing and harvesting their few acres of land?

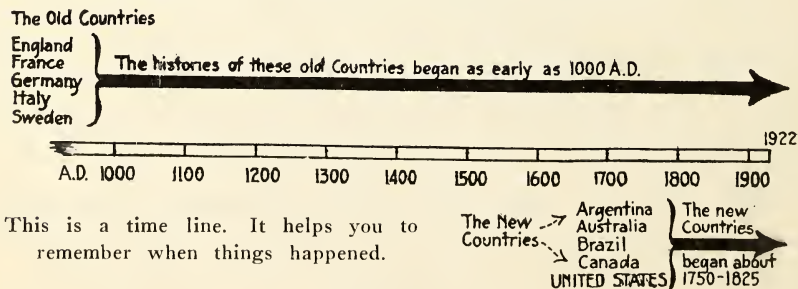


FIG. 30

No, China is neither the country of the pig-tailed laundryman, nor primarily of great cities with all their industrial life. Neither picture is a true one. China has cities,—large ones, quite a number of them over 100,000 in population. It also has a great rich farming area.

What does Fig. 30 tell you about the countries that you studied in the first pamphlet? How old is an "old country"? About how old is the United States as a country?

How old do you think this curious country is that we are beginning to study about now? Fig. 30 tells us that old countries go back at least a thousand years, and that the new ones are very new indeed.

Does Fig. 31 give you the same feeling as the other time line did?

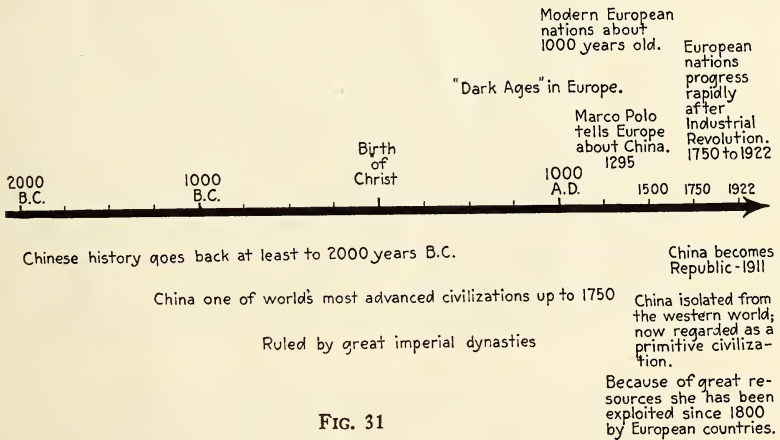


FIG. 31

Do you think of England and France and other European countries as old when you consider the age of China? Four thousand years—thirty times as old as the United States if you think just of the time since we became independent. If you think of our history as including all the time since early Colonial days, it is about twenty times as old.

And yet, do you really know as much about China as you did about England, France and Germany? Do you see much in the newspapers? Do news notices appear in our daily papers dated from Hongkong, and Shanghai, as they do from London, Paris, Berlin, Antwerp, Moscow, Petrograd, etc? As you sit down to dinner, do you expect to find foods that come from China? Do we use Chinese tools, machinery, and the like, as we use such manufactured goods made in Germany? Are woollens from which we make our clothing woven in China as they are so frequently in England and Scotland? How does it happen that we have so much to do with these European countries and yet so little to do with those of Asia?

Did you know that once—and not so very long ago—China was one of the wealthiest and most advanced nations of the whole world? Look at the time line of Fig. 31. Do you see that during hundreds and hundreds of years Europe is described as being in the dark ages? They had no great cities with fine libraries and churches. They lived crudely, without fine water systems and very much dependent upon what they could get in the

way of a living from the land, the woods and the streams. In fact they lived very much indeed as our American Indians and frontiersmen did fifty to one hundred years ago. While the barbarians of Northern Europe, the Germans, the French and the English were slowly learning to live in civilized ways, they were beginning to learn more about the wonderful country in the far east—Cathay it was called.

During the 1200s a traveller from Genoa went on a long and dangerous trip through Persia, over mountains and desert lands to the great Chinese Empire. His name was Marco Polo. He lived there for many years, finally returning home to tell his fellow countrymen about the wonders of the strange land in which he had been staying. While in China Marco Polo was received as quite a favorite of the Great Khan, as the ruler was called, and so was able to travel about over the country. When he came back to Europe he wrote a book called *The Travels of Marco Polo the Venetian*. This book was afterwards printed and read very widely over Europe. Probably Marco Polo exaggerated the things that he had seen in China, but he tells us of a country, the description of which sounds very modern indeed. Here are some little quotations from the book. The first tells about the kings' palaces.

CHINA 600 YEARS AGO AS DESCRIBED BY MARCO POLO

"It now remains to speak of a very fine palace that was formerly the residence of King Facfur, whose ancestors enclosed with high walls an extent of ground ten miles in compass, and divided it into three parts. That in the center was entered by a lofty portal, on each side of which was a magnificent colonnade, on a flat terrace, the roofs of which were supported by rows of pillars, highly ornamented with the most beautiful azure and gold. The colonnade opposite to the entrance, at the further side of the court, was still grander than the others, its roof being richly adorned, the pillars gilt, and the walls on the inner side ornamented with exquisite paintings, representing the histories of former kings. Here, annually, upon certain days consecrated to the service of their idols, King Facfur was accustomed to hold his court, and to entertain at a feast his principal nobles, the chief magistrates, and the opulent citizens of Kin-sai.

"Under these colonnades might be seen, at one time, ten thousand persons suitably accommodated at the table. This festival lasted ten or twelve days, and the magnificence displayed on the occasion, in silks, gold, and precious stones, exceeded all imagination; for every guest, with a spirit of emulation, endeavoured to exhibit as much finery as his circumstances would possibly allow."¹

Does that sound much like what you think a country could have been 650 years ago?

¹ Masefield, John: *The Travels of Marco Polo. The Venetian*, pages 306-307. E. P. Dutton & Company, New York, 1918.

Marco Polo thought that the European people were unfair to the Chinese. He says this about their food:

"With regard to food, there is no deficiency of it, for these people, especially the Tartars, Cathaians, and inhabitants of the province of Manji (or Southern China), subsist, for the most part, upon rice, panicum, and millet; which three grains yield, in their soil, an hundred measures for one. Wheat, indeed, does not yield a similar increase, and bread ~~not being~~ in use with them, it is eaten only in the form of vermicelli or of pastry. The former grains they boil in milk or stew with their meat. With them no spot of earth is suffered to lie idle, that can possibly be cultivated; and their cattle of different kinds multiply exceedingly, insomuch that when they take the field, there is scarcely an individual that does not carry with him six, eight, or more horses, for his own personal use. From all this may be seen the causes of so large a population, and all circumstances that enable them to provide so abundantly for their subsistence."¹

The empire saw large towns and villages grow up even in those ancient times in many places. We know from Marco Polo's book that the Chinese had learned even then to be fine road builders and that they had many well-bred horses.

From the city of Kanbalu there are many roads leading to the different provinces, and upon each of these, that is to say, upon every great high road, at the distance of twenty-five or thirty miles, accordingly as the towns happen to be situated, there are stations, with houses of accommodation for travellers, called yamb or post-houses. These are large and handsome buildings, having several well-furnished apartments, hung with silk, and provided with everything suitable to persons of rank. Even kings may be lodged at these stations in a becoming manner, as every article required may be obtained from the towns and strong places in the vicinity; and for some of them the court makes regular provision. At each station ~~hour~~ hundred good horses are kept in constant readiness, in order that all messages going and coming upon the business of the Grand Khan, and all ambassadors, may have relays, and leaving their jaded horses, be supplied with fresh ones."²

Today we think of China as being very backward in manufactures, perhaps because we in the western world are so far advanced. Here is a little account which, though very brief, tells us that they must have known a great deal about making things from metals.

"Kobiam is a large town, the inhabitants of which observe the law of Mahomet. They have plenty of iron, accarum and andanicum. Here they make mirrors of highly polished steel, of a large size and very handsome. Much antimony or zinc is found in the country, and they procure tutty

¹Masefield, John: The Travels of Marco Polo, pages 209-210. E. P. Dutton & Company, New York, 1918.

²Masefield, John: The Travels of Marco Polo, The Venetian, pages 207-208. E. P. Dutton & Company, New York, 1918.

which makes an excellent collyrium, together with spodium, by the following process. They take the crude ore from a vein that is known to yield such as is fit for the purpose, and put it into a heated furnace. Over the furnace they place an iron grating formed of small bars set close together. The smoke or vapour ascending from the ore in burning attaches itself to the bars, and as it cools becomes hard. This is the tutty; whilst the gross and heavy part, which does not ascend, but remains as a cinder in the furnace, becomes the spodium." ¹

And this was more than 600 years ago. It is no wonder that after hearing Marco Polo's glowing accounts of the new world he had seen in the East, they wanted to reach this land of splendor and fabulous wealth. Of course a good deal of his account was exaggerated, but it was accepted enough to cause navigators and merchants in Europe to risk a great deal to try to find this unknown land. You know the story of how they did it—of Columbus, and the Cabots, of Magellan and the various Portuguese, the French and the English seamen who discovered the different routes to the Far East.

STORIES OF CHINA TODAY

But now, isn't it astonishing to find after 600 years have passed that these Chinese people, instead of being regarded as one of the wealthiest and most advanced countries, are the most humiliated of countries? They are considered as very backward indeed. Here are some little accounts which have been written by recent travellers to China. The first one gives us a glimpse of the way they farm.

"Pong Hia lives in a village of three hundred persons, in which about thirty men are land-owners, having altogether forty-five acres of land. Pong Hia owns two acres, inherited from the father who adopted him. His land is worth one thousand dollars. His family consists of ten persons. He is himself forty-six years old, his wife is forty-one, his son is twenty-two, his son's wife is twenty-one, his four daughters are from ten to seventeen, and his two grandchildren are three and seven years old. He and his son till the land, hiring help at harvest-time, and weaving straw hats on rainy days. The women-folk make the clothing, rear pigs and fowls, and do all the housework. Their dwelling, with its site, is valued at a hundred and twenty dollars, their furniture at forty-four dollars, their clothing at forty dollars, their farming appliances at forty dollars. They have a water-buffalo, two hogs, thirty fowls, ten ducks, a pair of geese, a dog, and a cat. Last year Pong Hia sold twenty dollars' worth of rice from his farm, and paid \$3.60 in taxes. He has two hundred dollars out at interest at eighteen per cent." ²

¹ Masfield, John: *The Travels of Marco Polo, The Venetian*, page 71. E. P. Dutton & Company, New York, 1918.

² Fjelde, Adele M.: *A Corner of Cathay*, pages 12-13. Macmillan and Company, New York, 1894.

"The farmers live in villages, isolated dwellings being uncommon. The villages are walled, contain no wasted space, and are densely peopled. The wide-spreading, flat fields, lying along the river-banks at the foot of the hills, may be made to yield a constant series of crops without interval on account of winter

"When a father dies, his land is divided equally among his sons, the eldest receiving an additional tenth on account of the extra expense to which he is put in worshipping the spirits of the ancestors. The land is distributed very generally, though unequally, among the people, and is usually tilled by its peasant proprietors. Few own so much as two hundred acres; one who owns ten acres is reckoned wealthy, and he who owns one acre possesses a competence.

"The chief expense of tillage is in fertilizers, beans and seeds from which the oil has been pressed being commonly used, at an outlay of from six to forty and an average of twenty-four dollars upon every acre of land. Besides this, potato-peelings, hair from shaven heads, and all other vegetable and animal refuse is carefully husbanded and methodically applied to the soil. The clods of the field are laid up into little ovens to retain and be enriched by the smoke of the stubble burned under neath them. Abode houses, whose walls have for many years absorbed the fumes of a kitchen and the exhalations of human inmates, are pulverized and added to the ever-hungry earth. Each growing plant separately receives distinguished consideration, a scrap of tobacco-stalk being sometimes put beside its root to destroy underground grubs, while its leaves are frequently examined and sedulously freed from vermin. The rotation of crops is always practised.

"As no milk, butter, nor cheese is used, the only quadruped seen on the farm is the water-buffalo, or the zebu, which assists in ploughing and harrowing. Many farmers rear ducks, which are taken to the fields to devour the snails, crabs, and young frogs which thrive there at planting-time. Fowls often accompany the harvesters, picking up the last grains left among the stubble."¹

Do these stories make you think somewhat of the way the Russians farm? Certainly not at all, except by contrast, of the way we farm in the United States. Practically all Americans who go to China come back with stories of the lack of sanitation in that country. They always tell us first in describing the conditions, that Chinese homes have no bathrooms, that they are not piped with running water which you can get by merely turning on the faucet. No hot air, steam or hot water heating systems are to be found in Chinese towns and cities. Electric lights, or electric bells—such things throughout the vast expanse of that country are practically unknown. Just imagine cities without well-flushed sewage systems; the streets, the paved courts and the homes themselves are not clean according to our idea of clean-

¹ Fielde, Adele M.: *A Corner of Cathay*, pages 1-2, 3, 4-5. Macmillan & Company, New York, 1894.

liness. It really is a marvel—so these recent visitors tell us—that the population of China is as large as it is, and still continues to grow. They say that even the bricks of the floors of the ordinary homes upon which waste of all sorts has been thrown, contain enough disease germs to depopulate all Europe and America within thirty years.

“I was shown rapidly through the ground-floor of the house, including the kitchen and servants’ quarters, but, as my friend had invited me to dinner the following day, made only brief memoranda of the points that had interested me. The most serious matter was the very primitive and objectionable features connected with the sanitary arrangements. I have dealt with this subject elsewhere, but must insist that in these respects the Chinese are degraded to the last degree, and one wonders, if such conditions prevail throughout the Empire, how the nation should number four hundred millions, whereas, if they belonged to the same species with ourselves, they should all have been swept off the face of the earth centuries ago. Entering a room called the study, or library, we were invited to sit; a servant brought us a light refreshment consisting of fried peanuts, oranges, and a little root which had a delicious crisp taste. The root was dug from the river-mud and was quite new to me. I enjoyed it, not having seen the river. Wondering how I should dispose of my orange-peel and peanut-shells, I was told to throw them on the floor! The floor, it may be added, was apparently mother-earth, —damp, cold, and nearly black in color, in fact, a continuation of the street surface. Doubtless, the floor was tiled; the dirt, however, obscured all traces of it.”¹

And what about Chinese markets? Read what Morse has to say.

“Their markets display the most dubious looking messes, dirty fried fish, dried shrimps, smoked ducks, a bright yellow cheese-curd-looking substance, small seeds of some kind partially sprouted, little bits of some kind of a nut done up in a fragment of fresh palm-leaf, large shallow trays filled with the tiniest dried fish, and a multitude of other unknown edibles.”²

Perhaps one would say that drug-stores were a sign of advancement among the people. You can hardly go into a town of any size in America without finding a well-stocked drug store. What about China? A recent traveller tells us that “their drug stores with pounded snakes, dried lizards, gall stones and other equally absurd substances would drive a modern pharmacist stark mad to contemplate.”

Once, as you have learned from one of the quotations from Marco Polo, the temples and palaces of this country were examples of fine architecture. Now, according to the next story, the Chinese are paying less attention to such things.

¹ Morse, Edward S.: *Glimpses of China and Chinese Homes*, pages 20-21. Little, Brown and Company, Boston, Mass., 1902.

² Morse, Edward S.: *Glimpses of China and Chinese Homes*, page 28. Little, Brown and Company, Boston, Mass., 1902.

"On our way to the house where we were to dine, we stopped at a few Buddhist temples, and these were so dirty and dilapidated that any description of their lamentable condition would seem exaggerated. It was shocking to see the root of a tree prying off some delicate bit of stone carving from an entablature, and no one in the land with wit or enterprise enough to cut off the offending root and save the structure."¹

The time lines of "old" and "new" countries and the stories you have read of China tell an unusual story of a great civilized country standing perfectly still for a hundred and fifty years while most other countries forged ahead.

Why have such countries as England, France, Germany and the United States become "modern" while China stood still where she was in 1800? Why has she not adopted machinery on her farms, sewer and water systems in her cities? Why are there not scores of thousands of miles of railroads all over China proper instead of a paltry 6000?

CHINA IS ISOLATED FROM THE WESTERN WORLD

There is a very good reason. China has lived by herself for thousands of years. Never has she shown any desire until the last 20 to 30 years to mingle with other peoples, to interest herself in the affairs of Europe, or of Africa, or even of the Near East. Her thousands of years of history do not include, as did the careers of the Persians, or the Greeks, or the Romans, or the English, or the Germans, a trail of conquest in other lands. True enough, she pushed west to the north mountain boundaries, but never beyond. Until the last century these same boundaries also acted as powerful barriers to the penetration of China by other countries. China is a hard country to reach by land, and until the 1500s human beings had learned little about traveling by water. So you see there are very important reasons for Chinese ignorance of the machine method of our western world, perfectly good reasons why she has lived by herself.

Let us make sure first that we know where China is, how numerous the Chinese people are, and what kind of country they live in.

Where is China? Find it on the world map, Fig. 2 and locate it on the wall map in your classroom. Is it as large as the United States? Turn to the World map, Fig. 2, check it up by reference to other maps in your school geography.

A clear comparison is made of the sizes of the United States and China in Fig. 32. If one should travel from Boston to San Francisco, would he go as far as he would if he traveled from Peking to Kashgar? If he went from Hardin, in Manchuria, down to Canton, would he have to go farther than

¹ Morse, Edward S.: *Glimpses of China and Chinese Homes*, pages 28-29. Little, Brown and Company, Boston, Mass., 1902.

if he went from Portland, Maine to Galveston in Texas? On the map you will find points which show where a number of American cities are; these will help you to get an idea of the distances in the two countries.

Sum up now in a little statement in your notebook your impression of the territory of the two countries and distances that have to be traveled in the two countries.

Study the maps of Fig. 23 China really consists of two parts—what we may call, "China proper" and four outlying regions. Find China proper. See if you can locate it on the world map. Check it up against a map of Asia in your geography. The Chinese people have from century to century con-



FIG 32¹

trolled more than just this little strip of land along the western coast where most of the people live.

In your geography turn to a physical map of Asia, a relief map will be most helpful. Look first at the level plains called the Plain of China and the Manchurian Lowlands, which stretch back from the coast in the Nanking and Shanghai regions more than 500 miles. What two great rivers flow into the Yellow Sea through these plains? Locate them on the wall map. Are you astonished to find that the Hwang River and Yangtze River are so long? Compare them on the map of the United States with the Mississippi River. Are they as long as that, or longer?

How high above sea level is this so-called Plain of China? the Manchurian lowlands?

Now turn to the population map again. In what particular region are the people of China living most closely together. Compare this map of

¹ Bowman, Isaiah: "The New World." Copyright World Book Co., Yonkers, N. Y.

Fig. 3 with the physical map in your geography, which you are now studying. What direct connection do you see between the "lay of the land" and where the people are living?

Find on the map the desert of Gobi. Locate it on the wall map. Are there people living there? Find the East China highlands. How high above sea level are these highlands? How do they compare with the height of the Atlantic coastal plain?

CHINA HEMMED IN ON LAND AND SEA

From your study of the physical map of Asia, do you see how, on the west, northwest and southwest China is hemmed in by great mountain chains, some of them the largest in the world? Look at the enormous Himalayas, north of India, twenty to twenty-nine thousand feet high. Get the feeling of the tremendous obstacle that the Altai Mountains are, the Tien Shang the Hindu Kush, and the Kuenlun. Then too, even if invaders climbed these tremendous mountains, note how difficult it would be to traverse the thousands of miles of desert land that lies eastward, to the thickly settled lands of the Chinese people on the coast. Imagine traveling weeks across the terrible Desert of Gobi!

In all these centuries Chinese isolation has been nearly complete. On the southeast and on the northeast, of course, the barriers are not so great, the mountains are not so high. But, you must remember that neither on the north, nor on the south have there been people who could teach China much. Her civilization up to 1800 was as advanced, if not superior to, even those of western European countries.

WHY SO FEW RAILROADS IN ASIA?

And almost up to the present time the isolation of China has continued. You will see more clearly how difficult the land conditions are in central Asia, if you will study the railway map of Asia, Fig. 32A. Check this upon a physical map in your geography.

Where do the railroad lines run? Are there any railroads going directly east from the Mediterranean to Peking? Of course the map shows that if the land were level the shortest and probably the cheapest line that could be made would be one bearing on 40 degrees north latitude from Constantinople to Peking. Does the map show that there is such a railroad? No, not clear through. About half way railroads have been built,—a few isolated lines. From the Black Sea to the Caspian, and from the east side of the Caspian Sea southeast through to Bokhara, somewhat beyond Samarkand.

Why do you think they stop there? See if you can find the answer by studying the relief map or a physical map of Europe. Is it clear to you why a reasonably straight railroad could not be run from Constantinople to

Peking. Also, why nobody has constructed a railroad from Bombay straight northeast to Peking, from Calcutta or from any other principal city of that region?

But a railroad line has been built through the northern part of Asia—the great Siberian Railroad. It starts at Petrograd, in Russia, runs down through Moscow and then straight through Russian territory to Omsk, thence around the southern end of Lake Baikal. There it branches into two divisions running through Manchuria, connecting with Harbin, Vladivostock, Mukden and Peking. From there it runs south. The principal cities of China are connected along the East China plain, where the soil is reasonably level, and where it was not too expensive to build railroads.

Why do you think they built that Russian railroad when they could not build one straight through? Again the physical map will tell you. What is the lay of the land along the course of this Russian railroad?

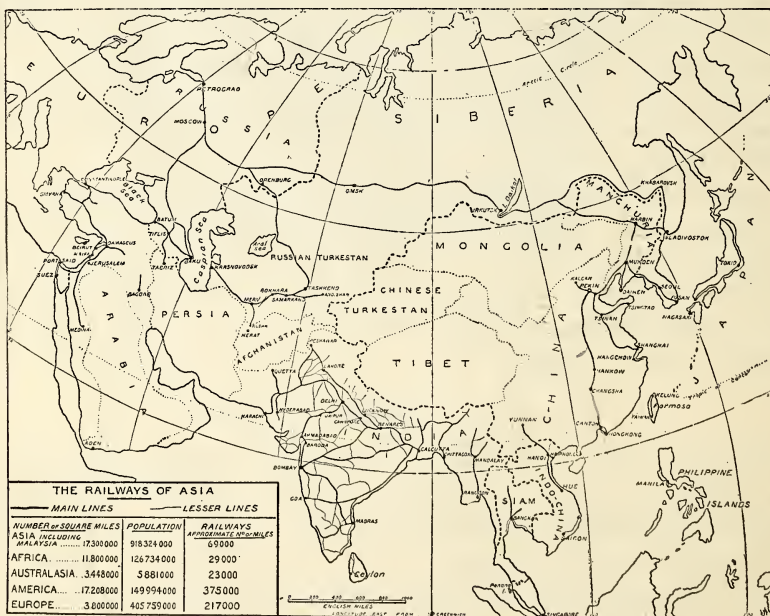


FIG. 32A

But there is another way to answer the question. During the past 100 years Russia advanced in one of the most marvelous movements of a great people from the very eastern edges of Europe straight across thousands of miles of old, isolated territory to the extreme eastern edge of Asia. Russia took in more territory on this march than she had within her European boundaries. What an enormous stretch of land this is from the Ural Mountains to the Sea of Okhotsk! Now, remember that the Russians had always been classed with the modern progressive nations of Europe. Coming under the impetus of the industrial developments of France, England, Germany

and the United States they saw clearly that the surest way to extend their empire and to hold the territory would be to have rapid and sure means of transportation. In these days, of course, that means railroads. So the Trans-Siberian Railroad was built.

MAP EXERCISE

On a blank map of Asia trace the existing railroads. Use Fig. 32A and a map in your geography.

As you do this, study carefully the way in which the route of each railroad is determined by the topography of the country—that is by the “lay of the land”. If you would like to sum up the whole railway situation for different parts of the world, so as to get a clearer view of the isolation of Asia and incidentally of China, the table on the railway map of Asia, Fig. 32A will help you. Notice that Asia, including India, French Indo-China and Siberia, has only 69,000 miles of railway. On the other hand, little Europe, only about one-fifth as large as Asia, has 217,000 miles of railroad—three times as much. North America, almost the same size as Asia, has more than five times as many miles of railways.

Now, what about China itself? China is larger than the United States proper—nearly 4,000,000 square miles. The United States has 270,000 miles of railroad track. In 1920 there were only 6,000 miles of railroad track open to traffic in China. This includes 857 miles in Manchuria constructed by the British. 2300 miles more are under construction. So we find China a country larger than the United States with only 1-20 as many miles of railway.

Furthermore, it was not until 1876 that China had any railways at all. In that year the Wosung line was opened. Even this was built entirely by Europeans. Railways in the United States began about 1830 and by 1876 (when the first Chinese railroad was being built) the Atlantic and the Pacific had been joined by a great transcontinental line. Turn back to the railroad map of the United States (Fig. 29); also to a map of Russia in your geography. Now compare them with this railroad map which shows Asia's railways. What an interesting example of the isolation of Eastern Asia!

What about water transportation? Here too China has practised her habit of living alone. For years she has used her great rivers for transportation, the Hwang and the Yangste. Large vessels, even ocean going vessels, can go today clear up the Yangste River to Hankow, a distance of 500 miles. Imagine ocean going vessels sailing up the Mississippi to St. Louis or to Minneapolis, or up the Hudson and through the barge canal into the Great Lakes! Many progressive Americans hope that sometime our inland waterways will be developed so that ocean-going ships can do that, but at the present time this is impossible.

China proper, with its great rivers has moved its freight slowly but very economically by crude river craft. Only within the last few years has it developed steamboat traffic, and almost not at all has it developed ocean-going trade.

For example, in 1918 the ships that entered Chinese ports totaled 80 million tons in freight capacity. Of these 30 million tons were British, and 25 million tons were Japanese. In other words, almost three-fourths of the foreign shipping that entered Chinese ports were from these two nations—Great Britain and Japan. 22 million, hardly one-fourth, were Chinese. Other nations contributed small amounts. The United States had one million, one-eightieth of all. Does this help to confirm what you have learned about English superiority in foreign trade?

IS CHINA SELF-SUFFICIENT?

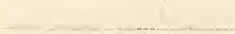
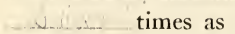
You have learned one very real reason why China has not kept up to date and made use of her great resources as western countries have. The preceding readings and exercises have been planned to teach you this.

Summarize what you now know about this matter.

But there is another very real reason why China has not progressed since 1800. *She has not felt any need for changing her ways of doing things.* China has been satisfied to jog along as she has done for thousands of years. Why should she establish great factories and use new types of time saving machines when she had 300 million people for a tremendous labor supply? Only one other country in the world (what is that?) can rival China in its labor supply. Look at the bar graphs on the population map of Fig. 3.

THE CHINESE PEOPLE ONE-FIFTH OF THE WORLD'S POPULATION

Do you know how many people there are in the world? Turn back to Fig. 3. How many are there? Which are the largest countries? Which is the very largest? How many times larger than the United States is China? Are you astonished to find this? How many times larger than Russia is China? Is it larger or smaller than India? How many times larger than the United Kingdom alone is China?

Here tucked away largely on this narrow plain on the eastern coast of the Orient is the largest and oldest people in the world. If you put India with them and study Asia as a whole, one is astonished to find that more than half of the world is included within that small area. Look at your world population map. Study also the map of Fig. 32A which compares the five chief continents, Asia, Africa, Australasia, America and Europe. How do Asia and America compare in number of square miles? They are . How do they compare in population? Asia has  times as many people.

Now contrast the size of Asia with the size of Europe. How many times larger is Asia than Europe? How many times larger in population

is it? Is this not a surprising example of the way in which some modern industrial nations have developed populations far larger in proportion to territory than have the great agricultural countries like China and India?

Now compare the population of Asia with that of America. The territories of the two are almost exactly the same. But Asia has more than six times as many people as America. How do you reconcile this fact with the comparison of Europe and Asia?

CHINA A SELF-SUFFICIENT FARMING NATION

A mammoth population living in one of the largest separate territories of the earth—can it support itself? Is it in Russia's present situation of having to beg for bread? Does China have such outstanding famines that the United States and other great food producing nations periodically have to ship food to her? In the main, No. For at least 4,000 years China has been the home of a great agricultural civilization.

There is a very important geographical reason for this. It has a soil as fertile as the soil of any other large region in the world. The fertility of the soil of China proper is very much greater than that of the soil in the different parts of the United States. You will read later how Americans have abused their soil by planting the same crop on it year after year, and by not fertilizing it properly. You will study how, as the American people used up their land; they were able to move westward, first to the Ohio and Mississippi Valleys, and then even to the far Oregon country. But the Chinese people living in the same place for thousands of years learned that they must take the greatest care of their soil.

For thousands of years they have farmed the same land over and over again, and still it shows no signs of being worn out. In the northern part of China proper is the *loess*, a very rich soil—in some places a hundred feet deep. It is thought that this very deep farming soil was built up by the dust which was blown for hundreds of thousands of years from the plains of central Asia. The soil in the central and southern parts of China proper is quite different. This region is a great alluvial plain and has been formed by the muddy waters of the Yangste and the Yellow Rivers. As these rivers flow down through the lowland of the east China plain, they deposit large quantities of a rich soil on the flats. Throughout the centuries of China's history this soil has been constantly built up.

We must not forget however, that even the best of soils will wear out in a few hundred years, probably less, unless the people take care to use it wisely. What does it mean to use soil wisely? Well, for one thing, it means to use the proper amount of fertilizer. In your study of science and agriculture later you will learn more of the details of how fertilizer acts upon soils. Of all the people in the world the Chinese have practised best

the fertilizing of the soil. And in addition, since they have had such great numbers of people, their labor supply was so enormous that each little piece of land could be tended to with the greatest care.

Then too, the people of China have been very industrious. They really make us think very much of the people throughout the central and northern parts of the United States in their vigorous ways of doing things. Probably one reason for that is that China proper lies almost entirely in the temperate zone. Turn to a map in your geography, which shows the climatic zones. Are you astonished to find that central and northern China proper and the United States are in almost exactly the same latitude? Peking and Philadelphia, New York and Chicago are almost exactly in the same latitude, 40 degrees north. This temperate zone in which we find ourselves is marked by quite sharp seasonal changes. You know how it becomes very warm in most parts of the United States in summer and, on the other hand, quite cold and crisp during four or five months of the autumn and winter. Of course this is not so true of the southern part of the United States, and we are quite inclined to feel that this has an effect upon the people who are compelled to live in such climates. It is hard to farm, manufacture, run trains and do all sorts of hand and brain labor in an enervating climate. So let us not forget that for thousands of years the Chinese have been vigorous, hard working and thrifty people, huge in number and living very closely together along the eastern coast of Asia.

Now with such unusual land resources combined with a favorable climate, has China been able to support her own people? As one reads the newspapers and magazines year after year does he find such startling appeals for help as he has recently in the case of Russia? Does China export food? Does she import foods? How much wheat does she raise? How much corn? How much rice? Can she stand on her own feet in producing things for her people?

Turn back to the wheat map of Fig. 4. Where does China stand in the list of countries? In production of wheat? Where does she stand in production per inhabitant? Does China export wheat? Does she import it?

What about corn? How much corn does she raise? How does she stand in the list of countries raising the largest amount? Are the Chinese people users of corn? Does she export corn? Does she import?

These questions concerning exports and imports can be answered from the next table. (The following is copied from page 747, *Statesmen's Year Book 1920, Imports & Exports.*)

Study the table carefully. What food stuffs did China export in large quantities in 1918? Does it look to you as though China was one of the great exporting nations of the world? Is there any kind of manufactured goods which China exports in really large quantities? Are there any raw materials which she supplies to other countries in quantity?

What are her chief imports? Do you get the impression from the study that you have made of China that she is a great industrial nation? How much light does this table throw upon that question?

Imports		Exports	
	1918		1918
	H. K. Taels ¹		H. K. Taels
Opium	520,000	Yellow Beans	14,339,023
Cotton Goods	151,380,423	Beancake	29,339,023
Woolen Goods	3,201,329	Raw Cotton	37,887,337
Metals	37,637,111	Bean Oil	24,981,240
Rice	22,776,933	Silk, raw and manuf'd	108,180,591
Cigarettes	23,983,563	Cow and Buffalo Hides	13,470,376
Coal	12,593,479	Tin	11,009,067
Fish	12,566,727	Tea	14,066,872

We must not think that because *China is an agricultural nation* that she does not have great industrial resources. Look at the iron and coal graphs of Figs. 33 and 16. Did you know that each one of the 18 provinces of China proper has deposits of coal which can be worked? A few are being worked due to the fact that Europeans—English, French and Germans, together with progressive Japanese have bought up the land and have taken to mining the coal. In one province alone one of the German geologists has estimated that there is enough coal to last the entire world for many centuries. (This is only an estimate of one man, remember). When we realize that the known coal fields probably will not last more than 100 years, perhaps not that long, this great mineral resource will make China one of the most important industrial nations in the world in the near future.

China is the world's largest producer of antimony. She has large deposits of lead and tin and oil. Look in the Statesmen's Year Book or the World Almanac or in any such statistical book, and you will find that China exports large quantities of tin. The table above shows that in 1918 more than \$12,000,000 worth of tin was exported. Oil is attracting our attention now as the coming fuel of the industrial world. China has large deposits of oil. She is believed to have the greatest resources of iron in all the countries of the earth. These iron deposits—for example, those in the Hankow region—are now in the hands of the Japanese. Since Japan is encroaching so much on Manchuria, she will also control the great iron and steel resources of that region.

If you think, therefore, how tremendously important in this industrial world coal and iron are, you will see how well China is fitted to become one of the great manufacturing countries of the globe; all the more so, because these mineral resources are owned, and sometime will be developed, by a people as industrious, as numerous and as intelligent as any people in the world.

¹ One Tael is nearly \$1.25 in our money.

Is it clear to you now whether China can live by herself? Is she Self-sufficient?

Write a summary in your notebook of the reasons why China has not kept up to date.

CHINA THE PREY OF EUROPEAN NATIONS.

But even though China has wanted to be left alone the European powers would not do so. For nearly a hundred years they have gone into Asia, China as well as India, and have taken control of ports, railroads and mines; have set up their own courts and have even run the post offices. To Americans, brought up to think that each people should carry on its own affairs, it comes with great shock to learn the high-handed and mercenary way in which these things have been done.

Imagine how you would feel if the French and the Germans had demanded ports on Long Island and the New Jersey coast, so that they could command the entrance to New York City; if the English had seized Philadelphia; if the Russians had taken Baltimore by force; if the Italians had stationed thousands of soldiers in Boston and Portsmouth; if Japan had garrisoned its troops from San Francisco to Seattle; if Argentina or other South American countries had sailed into the harbor of Galveston and occupied it by force. In other words, imagine how we would feel if our ports had been forcibly taken away from us by other countries. Think of what humiliation we would feel if Russia operated the New York Central Railroad! If Italy controlled the great Pennsylvania Railway between New York and Chicago; if Japan administered the great Northern and Canadian Pacific Railroads and the Oregon Short Line; if an English corporation took away from American owners the great anthracite coal mines of Pennsylvania! Does this seem preposterous to you? It is exactly what has happened in the case of China's ports, China's railways and China's resources of iron, coal and oil.

This is not the place to go into a discussion of European domination of Asia. When we come to the last pamphlet of the year—that on “International Relations”—you will study this problem carefully. For the time being therefore keep in mind the essential facts we have learned concerning China. (1) her great resources; (2) her stagnation in industry; (3) her labor supply; (4) her industrious people; (5) her careful farming; (6) her small farms; (7) her rich soil; (8) her long history; (9) her position as an “advanced” nation prior to 1750.

You should be able now to stand on your feet and convince anybody that China is self-sufficient, although very backward in industry and agriculture; and that in spite of her backwardness it is possible that she may again become one of the great powers of the world.

V. FRANCE AND GERMANY—MANUFACTURERS AND FARMERS

"When American troops first went into the front line trenches in France they were given the quietest sectors on the western front.

"Not a man had been killed in that part of the front since the war began, the French troops whom we believed told us.

"At one place along that front there was a little wineshop out in No Man's Land. We used to patronize it during the day while the Germans would get their refreshments there at night.

"These are typical of statements made by Yank officers and men who got their trench training in that sector.

"As every one knows, this area whose quiet conditions made it suitable for the training of new troops to trench life was along the Lorraine front. Few people in the United States, it seems, have been curious enough to ask why this particular part of the western front should have been so quiet. But not so in France where the importance of this region is much more widely known than it is in this country. The Lorraine front aroused a discussion in the press whose warmth, dampened considerably by a vigilant censor, has since the war brought about a long debate in the French Chamber of Deputies, followed by an official investigation by a committee of the parliament.

"It must be said also that the quietness of the Lorraine front puzzled some of the American soldiers who were in that sector. Just a few miles behind them they knew the French iron mines and smelters were working at top speed for the production of raw material for war munitions. And they could look over the German lines into that part of France held by the enemy and into Lorraine and see the iron mines and smelters there at work for the production of shells that they suspected were destined for them. And on the front which separated the producers of munitions for friend and foe reigned quiet."¹

Isn't it amazing that the most valuable lands on the borderland of France and Germany were for four years almost uncontested! Neither the French nor the German generals were throwing shells into this very important region where the ammunition, the gun carriages and the necessary machines of warfare were being made.

On a map of Europe find Lorraine. Now find Briey. Note what a small region this is. From the province of Lorraine in 1913 came 29 million of the 36 million tons of iron ore produced throughout Germany. Imagine,

¹From Streit, Clarence K.: "Where Iron is There is the Fatherland." B. W. Huebsch, New York City.

80 per cent of all the iron that the Germans had in that year before the World War! Right across the boundary line in France the Department of the Meurthe-et-Moselle, which had been left to France when Lorraine was seized by the Germans in 1871, came 19,800,000 of the 21½ million tons of iron produced in all France!

In 1913 therefore 92 per cent of her entire production came from this little region. Now this body of iron extended through the German Lorraine district across the frontier line between the two countries, and formed in France what is known as the Basin of Briey. From this small Basin came 70 per cent of all the iron ore produced in France. It is interesting to find that after the Germans had won the War of 1870, (which, by the way, was probably fought in large part for the control of the valuable Lorraine iron basin) they seized Lorraine. Queerly enough they left Briey to France. Why? Simply because they thought the iron ore there was of little value. It was not long, however, before they found that, by the use of a new process, the iron ore in the French part of the Basin could be used; it was, in fact, really superior to that in Lorraine. During the past fifty years iron mining and smelting has grown at a marvellous rate in this French Basin.

Of course, when the World War broke out in 1914, the Germans made their first rush across the line at this point and, since they only had to go a few miles, they took nearly all the Basin and remained in control of it until the end of the World War. There can be no doubt at all of the tremendous importance to the Germans of the possession of Briey. Before the World War Germany imported 14 million tons of iron each year and before 1913 France stood third in exporting iron to Germany. In fact, in 1913, France passed Spain in exporting iron to Germany and shipped 3,800,000 tons from the Briey Basin, only 700,000 tons less than the entire amount which Germany imported from Sweden in that year. Of course, the World War increased Germany's need for iron tremendously, and in addition the blockade cut off her supply from Spain. Is it not astonishing to find, however, that by August, 1915, the production of cast iron in Germany rose so fast that it was within half a million tons of what it had been before the World War when Germany had to import nearly half of her iron ore from Sweden, France and Spain? "According to a statement made on the floor of the French Chamber of Deputies on February 14, 1919, by Mr. Loucheur, a munition maker, who during the latter part of the War was Minister of Munitions, and who since the armistice has been Minister of Industrial Reorganization, the Germans by their exploitation of the Briey Basin during the War took 14 million tons of iron ore from its mines, only a little less than they would have imported from it in normal times of peace."

Is this not a striking illustration of the importance of great mineral deposits at a particular place upon the face of the earth. Just think how the

fortunes of hundreds of millions of people rested so largely upon this small iron basin, only a few miles square! At a later time we will learn more of the importance of such deposits.

Have you learned enough from this account to answer this question: Are France and Germany industrial countries? If you travelled through France and Germany would you expect to find many cities with large manufacturing plants? Or would you expect to find hundreds of little villages scattered about over the countryside with very few railroads and only occasional towns and cities? This was what you learned was true in Russia.

Turn back to the table of page 53. This will help you to tell whether France is almost solely an agricultural country like Russia? How does it help you to answer that question?

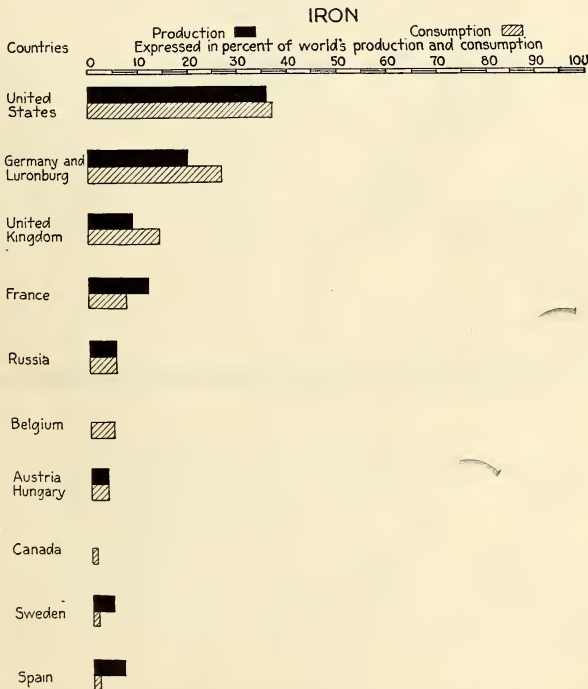


FIG. 33.

Fig. 33 supplies you with further data. Which are the four great iron producing countries of the world? Is France one of them? Is Germany? Does this conclusion check with the one you have drawn from the table on page 53. What per cent of France's people are farmers? In the United States about 49 per cent are engaged in agriculture. Do you call the United States an industrial country? An agricultural country? Both an industrial and an agricultural country?

men learned how to burn coal more economically. And it probably is not too much to say that the countries with coal supplies were sure to become the great industrial countries.

Study the coal bar graphs of Fig. 16. Does this statement seem to be true?

But it is not enough for a country to have large quantities of iron ore in the rock of her territory. In order for it to be of any use to make things out of, the impurities must be taken out by heating the ore to a great heat. This is called "smelting" the ore. To do this, of course, demands a good fuel; coal is the one fuel upon which men have relied all these many years.

Which countries are the great coal producing countries? Are France and Germany in the list? Is the United States?

ARE IRON-PRODUCING COUNTRIES COAL-PRODUCERS?

It is very important to see if the great iron producing countries are also the great coal producing countries.

Are the first four in each of the bar graphs (Figs. 33 and 16) the same? What does this tell you about the amount of coal that Germany, Great Britain and the United States would have to import in order to *produce* the large amount of iron that they do?

More important still, what about France in the two bar graphs? She is one of the great iron producers—is she well supplied with coal? No. She produces less than 4 per cent of the world's supply against 5 times as much by the United States. Yet she produces 12 per cent of the iron of the world. What must France have done to accomplish this?

Turn back to Fig. 17 which shows where the ocean-borne coal trade of the world goes. Does France import coal? How is that shown on the map? From what country does she get it by sea?

Prior to the war she got coal in large quantities from Germany. See if you can find Westphalia on the economic map of Europe in your geography. This is the greatest coal producing area of Germany. There is another one in western Europe which is of importance: the Saar River basin. Find that on the map, just at the northern edge of Alsace-Lorraine. It is a very small region—only 730 square miles.

Do you know that for its size there is no more disputed region in the world right now than this same little Saar River Basin. Why? Because in 1918, it was taken away from Germany by the makers of the Treaty of Versailles and given to France. Why? To offset the losses of coal that the French stood when the Germans destroyed some of their most valuable coal mines, chiefly those at Lens and Valenciennes at the beginning of the war. You see when Germany rushed westward on that first mad march in 1914 she headed straight for the two most valuable mineral sections of

France and the border country: the iron basin of Briey and the coal fields of Flanders in northern France. They knew only too well that the World War was to be principally a war of iron and coal. Can you tell why?

Find Lens and Valenciennes on an economic map of Europe in your geography. Trace the industrial section of France. Do you notice how it is scattered along the northern and western borders—near where the coal and iron deposits are?

As you go along in your study of the social sciences, you will see more and more clearly how sought-after have been those spots on the globe where coal and iron and oil have been deposited. Compare the population map of the world, Fig. 3 with the coal bar graph. What relation can you see between the distribution of people over the face of the earth and the places where coal is deposited in the earth? Now compare the iron map of the world (Fig. 34) with the population map Fig. 3. Is there any connection between the numbers of people who live at different places and the way in which iron happens to be deposited in the earth?

We must not forget that geologists and engineers who are travelling about the world in these modern times of ours looking over unexplored regions very carefully, trying to find new deposits of iron, tell us that there are probably untold quantities of iron in Central Asia and Africa. Are there many people living in Central Asia? In Africa?

How does this affect your answer to the question about the relation between where people live and where coal and iron are found?

COULD EITHER FRANCE OR GERMANY LIVE BY HERSELF?

Can industrial nations like France and Germany exist alone? For a number of lessons now we have been answering the question for United States, England, Russia and China. Could these countries exist by themselves if all other countries of the world should refuse to trade with them?

Would you say that the countries we have been learning about were large or small ones? The United States? The empire of Great Britain? Russia? China? Turn back to Fig. 3 which shows the way in which people are living in different places on the earth. Locate France and Germany on the map. Does it seem to you that as many people are living in that area as in the other countries about which we have been studying? Where are the blackest spots on the map of Europe? Do you find Holland and Belgium? That region together with the south of England seems to be perfectly black. Apparently more people are living there per square mile than in any other place in Europe. What does the map show you about France and Germany? About how many people are living in Germany according to the bar graph of this figure? Does France appear in the list of leading countries in population?

Because of the fact that it is not one of the eight most populated countries France is not included. Whereas in 1910 China had 18% of the population of the world, and India likewise had 18%, and Russia had 8%, little France had only 2%, less than 40 millions. On the other hand, the German Empire included about 4% of the entire population of the world, totaling approximately 60 million people. The area of the German Empire, however, is not much greater than that of France.

There is one very great difference, however, between France and Germany that you must remember when you come to the study of international relations toward the close of this year, and that is that France is now and has been for a long time a closely unified country. Germany, on the other hand, has from its very beginning been a federation of states. Throughout the hundreds of years—the 12th, 13th, 14th and 15th centuries, yes, even through the 19th century, one ruling house after another has tried to hold together the hundreds of little states, provinces, duchies, kingdoms, and even free cities.

As you study the history of Europe of the past few hundred years, this contrast between France and Germany will be brought out in a very important way. Notice on the map of Europe what a convenient settling place France was for the hordes of barbarians who came down from the north and over from the east. The British Islands were cut off, of course, for it was hard to get across the sea. The huge peninsula, which is now Spain and Portugal, is away around the corner, so to speak, and from the opposite side on the Mediterranean the northern coast of Africa extends. Curiously enough, although France has been for a long time a very unified people—less than 1% of the population of France was foreign born—the French people today are made up from original stock that came from more different people than any other country in Europe. What a strategic position she has been in all these centuries! "She commanded western Europe; she held the Channel against England; she had a great Atlantic seaboard; she spread out on the Mediterranean; she touched southeastern Europe by the passages of the Alps; she held the only routes east and west of the Pyrennes and Spain. Geographically France is the most favored country in Europe."

Now into this favored location came all sorts and kinds of Teutonic and Latin peoples, and throughout the centuries of development out of these many kinds of people have been made one unified and centralized nation. No matter what part of France a Frenchman comes from, no matter what work he does, how well educated he is, what church affiliations he has, what political party he belongs to, he is almost sure to be "for France". Loyalties are not easily divided there.

IS FRANCE SELF SUFFICIENT?

Turn back to the table which gave the percentages of the people in different countries engaged in agriculture. Do you recall that in Jugoslavia 88% of all the people were farmers, and that 77% of the Russians tilled the soil? On the other hand, only 6% of the people of England were farmers, showing us to what extent that island country had become an industrial nation. Now, France stands between the two extremes and makes us think very much of the United States. 40% of the French people are tillers of the soil.

In agriculture is France a self-sufficient nation? See the wheat chart, Fig. 5. In spite of her apparent small acreage of wheat does she produce enough to feed herself? Every inch of ground is made to give its utmost contribution to the food of France. Americans can hardly appreciate the intense care that a Frenchman takes of his little plot of ground. We are very wasteful of our land in this country. The French make us think of the Chinese in this respect. Why? Furthermore the French peasants drift away from the farms to the cities less than do those of other countries. France "still breeds peasants enough to stock her soil and of the same old rooted breed."

Remember, of course, that there are few landlords in France. During the French Revolution in 1793, when the Republic took the place of the Kingdom, and during the years that followed, the great estates of France were divided up and given to the farmers. Since that time great estates have been relatively unknown there. Of course scattered among the peasants who are tilling their own fields are remnants of the old "feudal nobility." Little groups of "squires," are still to be found scattered throughout France. But they are relatively few.

Study the other food maps of Figs. 4 to 10. Does France raise corn? Does she use much corn? How about cattle? Now potatoes? Sugar? Be ready now to sum up your answer to the question: Could France provide for herself if other countries refused to trade with her? For what food stuffs would she be in want? For what other things?

HOW SELF-SUFFICIENT IS GERMANY?

Between 1914 and 1918 Germany and Austria-Hungary and Turkey were completely cut off from the world. For four years ocean going ships could not reach these countries. Armies of millions of men hemmed them in on the west, on the east, and on the south. When the World War began on the Roumanian and Servian borders they were also opposed in those quarters.

By 1917 stories began to appear regularly in the newspapers and magazines of the United States, England and France that the Germans were

finding it very hard to get enough food to keep their armies and their civilian people going. They needed grain for bread stuffs; they needed cattle for meat.

Was Germany raising enough wheat or corn prior to the World War to supply her own needs? What does Fig. 4, the wheat chart, show you about that? Does Germany appear at all in that list of the eighteen leading countries? No, Germany raises so little wheat that she does not appear in the list. Germany was not primarily a user of wheat, nor of corn either. Compare the wheat map, Fig. 4, with the corn map, Fig. 6. Apparently Germany used almost no corn at all. That is also true of France and England, and all of the north, central and northern European countries. Evidently the United States, together with the southeastern European countries, are the great corn raising and using countries of the world. Germany does use some wheat, but not nearly as much as France.

Study the bar graphs under Fig. 4, the world wheat map. The second graph shows, however, that for the amount of wheat which Germany raised she farmed very carefully indeed. Do you recall the point that we made some lessons ago, namely, that the small countries of the world, had little acreage and yet farmed very carefully? We pointed out that the countries that appear in the second table under the wheat map do not in any case appear in the first table. It is very interesting that France, although smaller than Germany, raises much more wheat but does not begin to raise as much per acre, this too in spite of the care with which the French till their soil. How can this be?

What is the mystic food word in Germany then, if neither wheat nor corn is? *Rye!* Rye maps of the world leave little room for doubt that the leading country in the production of rye, considering the number of acres to the population prior to the World War at least, was the German Empire. Central and northeastern Russia likewise raises a great deal of rye, in fact, five times as much as the German Empire. But, per capita, Germany raised seven bushels against European Russia's $6\frac{1}{2}$.

It is worth remembering that those parts of Europe which do not raise any corn, and only a little wheat, do go in heavily for rye and other food stuffs. Do you remember that during the World War, we heard a great deal about "potato" bread being used in the German and Austrian Empires? Yes, since they could not get enough bread stuffs from the little wheat that they raised, and their rye, they turned to using potatoes to make bread from. What a huge supply they had is shown by the potato map, Fig. 7. Notice that the German Empire raised more potatoes than any other country, including even the great Russian Empire. They farmed so well that they raised more bushels per acre than any other country except the United Kingdom. Furthermore, they raised far more bushels per inhabitant and had a much larger percentage of their cropped land in

potatoes than any other country of the world. How does the United States compare with Germany in this respect? Study the bar graphs very carefully. The German Empire and Russia together in 1913 raised more than one-half of the world's potato crop. Do you wonder that they made "potato-bread" in 1916-18?

There is a third food that Germany went in for heavily, that is sugar. Germany was the leading beet sugar country of the world in 1913. She raised nearly $2\frac{1}{2}$ million tons of sugar. Study the sugar map, Fig. 8. Do you recall what we said about the two kinds of sugar that were raised in the world, beet sugar and cane sugar, and that they seemed to be very clearly marked off in zones throughout the world? The United States, India, Cuba and Java, raise cane sugar. It happens that the United States also raises some beet sugar. Germany and Russia are the really great beet sugar countries of the world. It is rather interesting to find that north-eastern France raises some of its own sugar.

What shall we say about the raising of cattle in these two countries? Study the cattle map of the world, Fig. 9. Do you think Germany must have had a hard time to get meat during those terrible years of the War? Was she one of the leading countries in the raising of cattle? Where does she stand in the number of millions raised in 1913? What countries raised more? Where does France appear in this list? In proportion to the population, how does France compare with Germany in the raising of cattle? What does the cattle map teach you are the most important cattle producing regions of France? Is there any area in Germany like that portion of France? Look at the third of bar graphs under the cattle map of the world. For her area, do you think Germany raised cattle well? How did she compare with England?

When you were studying about England you learned of her great supremacy in sheep raising. What manufacturing industry caused her to be especially interested in raising sheep? Do you recall how well she compared with Russia and Turkey and the other sheep raising countries? Study the sheep map of Fig. 12. Which country, France or Germany, raised the most sheep in 1918?

Should it astonish us, therefore, that Germany was able to hold out as well as she did during the World War? Although shut off from other countries, except her allies, she was able to stand the pressure of four years of complete blockade. Of course, we must remember that she helped herself as far as wheat and corn were concerned by her successful drive into Roumania, Servia and Greece. One of the greatest wheat regions of Europe is found in Roumania.

What is your answer now to the questions: Could France provide for her own needs if all the other nations refused to trade with her? Could Germany? For how long, do you think?

WE SHALL STUDY LATER THE IMPERIAL HISTORY OF FRANCE AND GERMANY.

When we studied about Great Britain we paid a good deal attention to the fact that she was originally a small island and had expanded to become a great world empire. We did this chiefly because that is the most important thing about England. Now, during the 1800's other western European countries have become very imperialistic. Practically all, France, Germany, Italy, Russia, Portugal, Holland, Belgium have secured land in regions far away from the home country. That is what we mean when we say countries are "imperialistic." They control other peoples besides their own. Are you astonished to find that your own country has become imperialistic? The United States controls lands and people thousands of miles away from the main land—the Philippines, Porto Rico, Hawaii, Guam and San Domingo. (Can you find these places on the wall map?)

Now, there is no more important matter to learn about than the way Europe has dominated Asia, and Africa since 1800. France played a large part in this, Germany a minor one. We cannot take the time now to do so however. In the pamphlet on international relations we will study it very thoroughly.

VI. THE SMALLER NATIONS—MANY HANDICAPPED BY CLIMATE, SOIL, MOUNTAINS, OR LACK OF RAINFALL

TABLE IX.

	Area Sq. Miles	Population	Climate	Soil	Arable Land	Rainfall	Essential Resources
<i>Andean Mountain States</i>							
Bolivia	514,000	2,890,000	-----	-----	-----	-----	-----
Chile	290,000	3,946,000	-----	-----	-----	-----	-----
Colombia	441,000	5,420,000	-----	-----	-----	-----	-----
Ecuador	116,000	2,000,000	-----	-----	-----	-----	-----
<i>Balkan Countries</i>							
Bulgaria	42,000	4,500,000	-----	-----	-----	-----	-----
Greece	56,000	5,500,000	-----	-----	-----	-----	-----
Roumania	122,300	17,393,000	-----	-----	-----	-----	-----
Serbia (Jugo- Slavia)	117,000	14,789,000	-----	-----	-----	-----	-----
<i>Central America</i>							
Costa Rica	23,000	459,000	-----	-----	-----	-----	-----
Guatemala	48,300	2,004,000	-----	-----	-----	-----	-----
Honduras	44,300	606,000	-----	-----	-----	-----	-----
Nicaragua	49,200	746,000	-----	-----	-----	-----	-----
Panama	32,400	337,000	-----	-----	-----	-----	-----
<i>North Medeter- anean Countries</i>							
Italy	110,600	36,120,000	-----	-----	-----	-----	-----
Portugal	35,500	5,958,000	-----	-----	-----	-----	-----
Spain	194,800	20,720,000	-----	-----	-----	-----	-----
Turkey	100,000	5,000,000	-----	-----	-----	-----	-----
Switzerland	16,000	3,937,000	-----	-----	-----	-----	-----
<i>Scandinavia</i>							
Denmark	17,000	3,171,000	-----	-----	-----	-----	-----
Norway	125,000	2,632,000	-----	-----	-----	-----	-----
Sweden	173,000	5,814,000	-----	-----	-----	-----	-----
<i>The Low Countries</i>							
Belgium	11,800	7,762,000	-----	-----	-----	-----	-----
Holland	13,200	6,769,000	-----	-----	-----	-----	-----

To the Teacher: Assign for special study one of these countries in Table I to each pupil in the class. Have the pupil summarize the country assigned to him by answering the questions below.

Answer these questions about these groups of small nations. Use geographies and reference books and maps showing world resources. Geographies such as the McMurray and Parkins, Atwood, Brigham and McFarland, etc. contain maps of this character. Also find out if your school library has these books.

(1) Finch, V. C. and Baker, O. E., *Geography of the World's Agriculture*. Write to the Supt. of Documents, Washington, D. C. Price \$1.00.

(2) *World Atlas of Commercial Geology*, Part I. Write to the Director of the United States Geological Survey, Washington, D. C. Price \$2.00.

(3) *Statesman's Yearbook*, The Macmillan Company, New York. Price \$7.50.

1. To what extent do these small nations produce the products in Table II? In the proper columns write your answer thus: *much, little, not at all*.

TABLE X

	Wheat	Corn	Cattle	Wool	Cotton	Coal	Iron	Timber	Potatoes
Andean Mountain Countries	little								
Balkan Countries	much					little			
Central America	much		little	much					
North Mediterranean Countries	much								little
Switzerland									
Scandinavia									
The Low Countries									

2. In general what is the climate of the country assigned to you for special study?

Check the correct statement below:

- The climate is favorable to self-sufficiency.
- The climate is unfavorable to self-sufficiency.

3. Soil:

- Most of the land is productive.
- Little of the land is productive.

4. Rainfall.

- The country has sufficient rainfall.
- The country has insufficient rainfall.

5. The country (assigned to you) produces a sufficient supply of: wheat, corn, cattle, coal, lumber. Underline for the country you are assigned to study the products of which it does produce a sufficient supply.

6. Notice in Table I that most of these nations have a small population. Be ready to explain *why*.

7. What are the chief points of strength and weakness in these small nations?

8. Find pictures, maps, and charts which will help prove that these nations are self-sufficient.

9. Find out distinctive resources or products of these small nations upon which the rest of the world depends. Table I lists the chief small countries of the world. They are handicapped by one or more of the following geographical factors: climate, soil, limited natural resources, mountains or lack of rainfall. We have filled out the first two columns of this table. See if you can complete Table I. by filling in the blank spaces under the small countries mentioned. Use the identification map Fig. 2 to locate the smaller nations. Close your book and on a mimeographed map of the world write in the locations of:

- (a). Andean Mountain States.
- (c). Central American States.
- (d). North Mediterranean Countries.
- (e). Switzerland.
- (f). Scandinavian Peninsula Countries.
- (g). The Low Countries.

10. Study the relief maps of America and Europe. Use any geography you have. Which of these statements is the best general conclusion to be drawn from a study of the geographical features of these small countries?

- 1. The climate is a severe handicap.
- 2. The soil is fertile.
- 3. The scenery is beautiful.
- 4. The resources of these states are limited.
- 5. These states support a sparse but hardy people.
- 6. Mountains hinder the self-sufficiency of these countries.

REVIEW

COUNTRIES WITH FAVORABLE GEOGRAPHIC CONDITIONS
VERSUS SMALL NATIONS HANDICAPPED BY CLIMATE, FEW
RESOURCES, SOIL, MOUNTAINS AND LACK OF RAINFALL.

Below are several short paragraphs descriptive of the larger nations that you have studied. Read these paragraphs and then write the name of the countries to which each description applies at the top of that paragraph.

1. This country is largely self-sufficient, supports a large population and boasts of a very old civilization. It is interesting to study an economic map and discover that this nation is rich in coal and iron (largely undeveloped). Her land, even though it supports a tremendous population, is still highly productive because these people practice intensive agriculture, conserve their water supply, enjoy a heavy rainfall and use fertilizer wisely. If you study Fig. 3 a population map where dots illustrate density of population (one dot to several hundred thousand of people) you will find that the *South* half (which half?) of this great country looks as though a bottle of ink had been spilled upon the map. It is said of this country that its area and population, its tremendous resources and rich soil make it a country upon which the world will more and more depend.

2. This country's striking characteristic is its rapid rise to a position of a world power because of its favorable geographical position. Its location made possible the development of manufacturing and trade throughout the world. The essential resources for an industrial nation are coal, iron, raw products and facilities for carrying its products to markets. Study Figs. 16 and 33 (world resources of coal and iron) and the rise to world leadership of this nation is more easily explained. Isolated from constant warfare of rival nations and yet so situated as to profit by the commerce of its neighbors, is it any wonder that this nation developed into a great maritime power? It may be dependent upon other parts of the world but it so happens that it controls enough of the world and maintains the ships by which to assure for itself its needed food.

3. This country is a curious mixture of self-sufficiency and interdependence. Its chief drawbacks are an unfavorable climate, and poor transportation,—serious handicaps to any large nation. It is principally an agricultural nation. A study of Figures 6 and 9 (corn and cattle) shows these to be important crops here. Notice though that a large part of this country is unproductive. Why?

But resources (land, forest and minerals) though favorable are not the only factors in making a nation. This empire had as its chief weakness a type of government that hindered progress. An old feudal system with a few nobles owning most of the land made

agricultural progress next to impossible. Coal, iron and lumber are also found in But even with all these factors that should have made this country a great industrial nation, nevertheless she did not rise to this position. Transportation is hindered by many obstacles, chief of which are climate and lack of industrial progress.

4. Here is a country which for centuries has been able to provide food enough to support a hardy, thrifty people. It too has its share of essential resources as a study of Figs. 4, 9, 16 and 33 show (wheat, cattle, coal, and iron). It is said that these geographical factors are favorable to the self-sufficiency of the people. Extensive lowlands and a variable climate (temperature and rainfall) generally lead to a country of land-owners. This not only assures wise care of the land but also secures a happy and contented people. But favorable location is the chief thing that determines possible industrial development. Here is a country in the midst of one of the two or three most densely populated regions in the world. Thus it is well situated for industrial progress. Possible markets are within short distances, for some six or seven countries border this country. It also faces two important water highways so that its products are easily distributed throughout the world.

5. This country is one of the few that could continue to exist if the rest of the world stopped exporting products to it. Here is a country with varied climate, rainfall and resources. Study world maps which show that wheat, cattle, wool, cotton, coal and iron are produced and what do you note about this country? You find that these products are distributed abundantly and somewhat evenly over this country.

But this country is not primarily agricultural nor is it chiefly industrial. Remember that these two things depend upon each other. Fortunately it possesses excellent transportation—its railroads are of the world's best, its harbors, lakes, and rivers, make possible the exchange and distribution of its goods. This varied civilization makes possible a happy, contented, and prosperous people, living in a way that hardly any other country in the world enjoys.

6. Here are a number of statements descriptive of another important country. After reading them would you say this was an agricultural nation?

1. The soil is not very fertile; 2. much of the land is mountainous and a considerable part of it is very sandy; 3. the "lay of the land" sloping as it does to the northward deprives it of the hot summer weather essential to so many crops; 4. there is little rainfall, in fact, hardly enough for raising these crops.

But these people have achieved a success worthy of mention. They have handled their land wisely and experimented until they found crops most suitable for it. They have greatly increased the yield of these crops per acre by intensive farming.

Now such a country as this, with a dense population (over 300 per square mile), and raising insufficient food to feed itself, must find some way to pay for the food that it has to import. Study Figs. 16 and 33 (coal and iron.) Does this country possess these essentials for manufacturing? Yes, the raw materials are close at hand. Manufacturing started fifty years ago and her people became great salesmen of their products; her merchant marine carried goods the world over and her industrial strength rapidly increased. Her people have a favorable location for continued industrial development—nearness to raw materials, a cheap labor supply and easy means of marketing their products.

Write in line of two why each of these nations became great.

TABLE XI.

	Area (Square miles)	Population	
China	4,277,100	327,910,000	<div>Large labor</div> <div>cheap land</div> <div>rich farming land</div>
France	212,700	41,476,000	<div>Essential resources</div> <div>Favorable marketing</div>
Germany	171,900	59,000,000	<div>Essential resources</div>

British Empire 13,700,000 475,000,000

Large Navy
Iron Coal = mfg.
Seacoast

Russia 8,417,118 182,000,000

Large rich soil area

United States 3,743,529 117,859,000

Iron etc. - mfg.
Intelligent people
Favorable location

Make a list of the nations of the world whose progress can be explained by these factors:

1. Essential
natural
resources.

2. Favorable
physical
conditions
climate, soil,
etc.

3. Favorable
locations
for marketing
their products.

4. Features
promoting
a happy
contented
people.

United States
British Am.
France
Germany

U. S.
Russia
Germany
China

England
Germany
France
U. S.

U. S.
Argentina

After each of these nations write three things which they have to import from other countries. (See school geographies and *The Statesman's Yearbook*.)

United States	copper	sugar	rubber
England	cotton	Food	metals
France	fuel	machinery	silk
Germany	cotton	copper	skins/hides
Russia	textiles	metals	clothing
China	coal	metals	cotton goods

Now write after each of these countries three ways in which they are largely self-sufficient.

United States	agriculture	mfg.	trade
England	mfg.	navy	labor supply
France	agriculture	mfg.	
Germany		mfg.	labor supply
Russia	ag.	forestry	
China	ag.	labor supply	

What is the chief conclusion to be drawn from this study of the resources of the world. Is it (1) that the variety of resources in each nation determines its self-sufficiency; (2) that geographical conditions determine the size, prosperity and progress of a nation; (3) that the great nations are able to live by themselves; (4) that the types of government that nations devise explain their success; (5) that nations today are independent. Underline the statement that you think is correct. See Fig. 19 (of world trade). Explain your answer.

Now write a half page summary of this part of the pamphlet, pages 100 to 105 in which you tell the main conclusion of this survey of world resources. Tell why you think that is the most important conclusion to be drawn from the study so far.

VII. ARE MODERN INDUSTRIAL COUNTRIES REALLY SELF-SUFFICIENT? SHOULD THEY BE SELF-SUFFICIENT?

We have now studied the ability of most of the leading countries to live by themselves. What is the outstanding conclusion from the work so far? If the greater powers of the world should refuse to trade with any one of them, could that country live by itself? Yes, undoubtedly it could. England in spite of her limited area, her only moderately good land, and her crowded population, could live by herself because of her imperial possessions in other lands. Russia, too, undoubtedly could do so, once she gathered herself together and learned how to use modern methods in developing her resources and in building an adequate transportation system. China has plodded along by herself for thousands of years, largely because she has unusually rich soil, a large and thrifty labor supply, and a very favorable climate for agriculture. She has merely plodded, however, much as Russia plodded before 1914, with simple farm tools and primitive ways of working. The standard of living in both of these countries was much lower than that of western industrial nations like the United States and England. We shall learn more as we go on about the added material comforts that people acquire as they become more and more industrial and increase trade and intercourse with other nations.

We found, too, that France and Germany were to all appearances self-sufficient. But was this self-sufficiency real or just seemingly so? Germany was a very modern and up-to-date country with great industrial efficiency; she knew how to make and did make the best possible use of all her resources. Yet by the end of the War Germany was on her knees begging for bread. And since the armistice the true state of affairs has been revealed; there was a limit to her self-sufficiency. She was able to hold together for over four years, with absolutely no help from other nations, but in conditions of war she was not able to hold on longer. Without war, merely a trade blockade, it is not possible to tell how much longer her own resources would have carried her. But if she were forced to make herself permanently independent, the changes she would have to make within her industries would take a very long time. And there is no question that a trade blockade would be a pretty serious thing for either France or Germany.

Besides, is there not a very important difference between the self-sufficiency of an agricultural country like China or Russia and an industrial one like Germany? An agricultural country may have fewer of the so-called comforts of modern civilization—pianos, automobiles, variety in food and

clothing, fine houses, beautiful cities—but it rarely lacks food. Therefore, the sudden shutting of it off from the world would not affect it so seriously. You could not imagine, for instance, changing China's conditions a great deal by blockading her; Russia would be affected more, but not nearly so much as the more modern nations.

In an industrial country, such as Germany, England, the United States, the majority of the people are not engaged in raising foods; a very large percentage of them are doing other things, which means that half, or less than half, are raising enough food for all. In England only six per cent of the people are on farms. Do you see the dangers for such nations in case of an emergency? Do you see how they would have to face a different problem from that of China or Russia? Of course when a national calamity comes as it did to Germany and Austria, these "factory" and "city" workers either starve or go back to the land—as they are doing around Vienna. Now we have studied in this pamphlet the interdependent life within a modern industrial nation like our own. In fact throughout the pamphlets we will be studying many kinds of self-sufficiency—that of the pioneer, the frontiersman, the colonist, who must depend on himself for his food, his clothing and the roof over his head. But even he puts up with these conditions no longer than he has to. The history of all modern nations shows that gradually, sometimes very rapidly as in America, *the pioneer develops community life* in which he comes to depend on some one else who makes a different thing. One part of the country comes to depend on another part. One person in a factory depends on what someone else is doing in that factory or on others a long distance away. The independence of the land-worker in pioneer times has thus given way to the interdependence of the modern worker. In the modern machine world the people of a country are almost completely interdependent.

Now there is another kind of self-sufficiency we must study a great deal—the apparent self-sufficiency of modern nations. The lesson of Germany and Austria makes us feel now that probably the very foundation of this independence is unreal and that in truth most modern nations can maintain their self-sufficiency only by forcibly conquering lands and resources and people in other more favored parts of the earth.

In our study of international relations we shall carry this point further. It is of tremendous importance. How could England exist in an emergency without her imperial possessions, India, Egypt, Australia? Why did Japan want Manchuria, and why has it arranged matters so as to control one of China's richest provinces, Shangtung, if not for the need for more land and more natural resources? Why did England, France, and Russia practically dominate the entire continent of Asia during the 1800s? Why do the European countries quarrel over Mesopotamia and portions of Africa? Is it just the desire for conquering people? Or is it that their people want the valuable resources of these favored spots on the earth? Iron on the borderland

of France and Germany is a deep-rooted cause of war. Iron, coal, oil in China, Africa, Mexico—great temptations for modern nations which depend for their existence on supplies that they can get from abroad. Fortunately the United States is unusually well provided with large resources of nearly all kinds.

So, as we go forward in our study of these matters we should question whether modern nations really *are* self-sufficient, *and if they are, why?* We should be very insistent on finding out whether they *ought* to continue to be independent and self-sufficient.

Is it the ideal that every nation should be independent of every other nation? How often do you think there would be wars if every nation was independent? How many nations do you think there would soon be in the world? Do you think it would be a good thing to have just a few nations—which would happen if the big nations swallowed up the little ones. Would it ever be possible to *discipline* any one nation say, by a trade blockade, if they were all independent? What would be the only course in such a case?

Russia just now is in a state of chaos, but it is to be hoped that out of it all will develop an enlightened civilization and a scientific knowledge of how to make use of her great resources. What is the most desirable thing for her? What is the best end for her to work toward? Shall she strive to make herself independent of the rest of the world by laying the foundation for conquests and developing her resources to the fullest? Shall she raise and manufacture the kinds of things she can in her own country and then forcibly take the other things she needs whatever they happen to be? Or, shall her people do what they are naturally and best fitted for and exchange what they can do best with other nations for what they can do best? Which do you think should be the hope of Russia?

Suppose that every nation were entirely independent of every other one. Do you think there would be any wars? Do you think it would be possible to build up our nation, for instance, so that we were entirely independent of every other nation? That would mean, of course, that we wouldn't trade at all with any other nation. We wouldn't get books or magazines from England, or novels, or poetry from Russia or India or any other country; there would be no works of art, nor any copies of the great old masterpieces of statuary that stand in the great art galleries in the older countries. Suppose that each continent was a world unto itself—do you think that would be a good thing?

If you don't think we should live in such a way that we could not exchange anything with any other country, do you suppose some countries should be independent and some not?

What if every country were dependent for some of the things that go to make up its daily life on other countries—on all the other countries. That is the situation now to some degree. That is, you can think of things that you use every day that either come from other countries or are copied from

Should we be self-sufficient?

their products. Many of you use imported china or wear Russian-leather shoes, use dyes and German silver from Germany, have Japanese kimono's or Japanese waste-baskets or fans, have Indian sewing baskets, wear French flowers in your hats, use Irish linen on the table, India rubber and spices from the Orient. Do you think we ought to be more or less independent than we are? Or, do you think we ought to remain as we are now and let wars continue? Suppose that we were dependent not only for certain luxuries and a very few necessities upon other countries, but for real every-day necessities that we couldn't do without. Do you think that would be a good plan? Why? Couldn't nations make each other behave if that were the case? Would nations be so ready to make war?

What do you think of this next argument? Some countries by reason of the nature of their soil, the temperament of their people, their peculiar tastes and habits and customs, can make things that other peoples can't possibly make, and should therefore follow their natural inclinations and exchange what they have for what they want that other nations have. Of course in the field of books and art and literature you will readily agree that all nations should exchange freely. What about other things that we call the essentials of life? Suppose that Russia, say, could raise cotton, but the United States could raise better cotton, enough for herself and Russia and the other countries that wanted to buy; and suppose that the United States could raise wheat, but Russia could raise better wheat. Do you think for the sake of being independent both should raise cotton and both raise wheat? Or is it better to exchange, just as a milliner might exchange her work on a hat for a dressmaker's work on a dress? What do you think?

Suppose that a city wanted to be self-sufficient. What are some of the things that would happen? List ten that you can think of right away. We would think it was foolish, wouldn't we? Suppose that every farmer wanted to be independent. Think of the things he would have to do—become truly a jack of all trades as his pioneer ancestor did. And back he would be to the early primitive times which we are all trying so hard to advance from. Isn't the case of nations similar to that of the smaller communities, such as cities, and towns, and villages?

What is your judgment? Write a check in the space at the end of the statement that you believe in:

1. Every nation should be self-sufficient.
2. Nations should depend on each other for luxuries but not for essentials.
3. Nations should be dependent on each other for essentials.

As you study Part II of this pamphlet, see if you can see how the relation of nations is similar to the relation of cities and of industries and of individuals everywhere. Have the three statements in mind also and see if you want to change your decision after reviewing this pamphlet.

China
Russia
England

~~VIII~~ WE MUST BEGIN NOW THE STUDY OF ANOTHER TOPIC THAN CITIES AND KEY INDUSTRIES IN MODERN NATIONS.

We have come to the end of our account of the interdependence of the machine world. We have studied the chief countries of the world, trying to discover whether they can exist alone. We have learned much about how our own people live in cities, how their living depends on machines and railroads, how one person, one industry and one part of the country depends upon another. We have seen how sharply the complicated life *within* countries is contrasted with the self-sufficient life of imperial nations. In that connection we have raised serious questions about the wisdom of permitting the imperialistic practices of these self-sufficient countries to continue. So we have merely laid the foundation for an understanding of how European countries came to develop into world empires, encroaching on each other and quarreling with each other for territory in far-off lands.

We need now to come to the study of the kind of government our country has made to care for us in this complicated machine world. We need to study how our cities work and what the municipal and national government does for the people, in the country as well.

Later in another pamphlet we shall consider what we American people enjoy, how we spend our leisure time, whether we like fine things—music, pictures, good books and how we compare with other people in this respect. As we go along we ask ourselves whether we are giving too much attention to manufacturing things and to making money and not enough time to enjoying the fine and beautiful things of life.

YOUR NEED FOR A SUMMARY OF THE WHOLE PAMPHLET

Now before going on to the next pamphlet you should try to bring together in a short summary all the threads of the story. Look over the lessons again, select the chief questions and see if you can answer them. If you can you will know that you have learned some important things about our country and its relations with the other countries of the world.

IMPORTANT QUESTIONS YOU SHOULD BE ABLE TO TALK ABOUT

To the Teacher: These questions are brought together here as a summary of the important points taken up in the entire pamphlet. It is not intended that you will take the time to have them all answered in class.

1. What are the chief differences in the way the pioneer made things and the way we do today?
2. What are steps by which the making of things by hand gave way to making things by machines.
3. What are the chief causes for the growth of cities, 1800-1922?
4. Why do cities grow up where they do?
5. Make a little summary which will answer the question: *Does America Use Her Waterways Well?*
6. Show how dependent modern life is on coal.
7. Tell how coal was made. How long will the present supply last?
Can it be replaced? 185 for fueling
75 years
with coal
8. To what extent does water determine where people live on the earth?
9. "It is probable that the United States could exist alone longer than any other country in the world." Could you convince some one of this?
10. If England is a self-sufficient country, it is chiefly because of her ~~colonial empire~~ *ships*. (Complete the sentence and show that it is true.)
11. In what regions of the earth are the densest populations? In what part or parts of the United States are people living most closely together?
12. What are the chief reasons why people live in certain regions and not in certain others?
13. What country is the world's leader in ocean-shipping? Why, and how has she come to this position of leadership?
14. State the steps that you would follow to find out whether a certain country could exist alone. What facts would you need?
15. Prove that "Coal is king in the manufacturing world" by showing how certain nations have become leaders.

16. Why was Russia, a world power in 1914, begging for food in 1920? Account carefully for the crash of this nation.

17. Prove by using Russia, England, China, or the United States as an example, that fertility of soil, climate, area of territory, and mineral resources chiefly determine whether a country is self-sufficient or not.

18. Give three reasons why China, once an "advanced" nation, is now regarded as a backward one?

19. How important are railroads in the life of a country? Tell several ways the advance of the modern nations has depended on railroads.

20. Prove that iron and coal deposits are chief factors in determining which countries become leaders among nations. Use illustrations from different countries.

21. Why is there danger in the tendency for modern countries to become self-sufficient?

22. Do you think nations should be self-sufficient so far as possible, or interdependent? Prove your answer.

WHAT IS THE TIE THAT BINDS ONE SECTION OF A COUNTRY TO ANOTHER SECTION? DOES THE SAME TIE BIND COUNTRIES TOGETHER? *Trade*

IS THE RELATION OF COUNTRIES TO EACH OTHER LIKE THE RELATION OF SECTIONS WITHIN A COUNTRY?

IS THERE ANY MORE REASON FOR NATIONS TO BE COMPLETELY INDEPENDENT OF EACH OTHER THAN FOR SECTIONS WITHIN A COUNTRY? WHY?

To the Teacher: Now give the FINAL TEST on THE CITY AND KEY INDUSTRIES IN MODERN NATIONS.

Now take up at once Pamphlet No. 3.

VIII. A SUGGESTED LIST OF BOOKS ON RESOURCES AND INDUSTRIES IN A MACHINE WORLD.

I. BOOKS CONTAINING STORIES, PICTURES, MAPS, etc., SUITABLE FOR JUNIOR HIGH SCHOOL PUPILS.

1. Allen, Nellie B.: *United States*. Ginn and Company, New York, 1910.
2. Allen, Nellie B.: *The New Europe*. Ginn and Company, New York, 1920.
3. Allen, Nellie B.: *Asia*. Ginn and Company, New York, 1916. These three books, called *The Geographical and Industrial Studies*, are excellent supplementary material. They contain many pictures and interesting stories.
4. Bengtson, N. A. and Griffith, Donee: *The Wheat Industry*. The MacMillan Company, New York, 1915. A good supplementary reader. Many excellent pictures and maps help to make the book concrete.
5. Bogart, Ernest L.: *The Economic History of the United States*. Longmans, Green and Company, New York, 1918. An excellent reference book for the history of industrial progress in America. It contains many charts, tables, pictures and maps.
6. Brooks, E. C.: *The Story of Cotton and the Westward Migration*. Rand, McNally and Company, Chicago, 1916.
7. Brooks, E. C.: *The Story of Cotton and the Development of the Cotton States*. Rand, McNally and Company, Chicago, 1911. Two interesting supplementary readers describing the corn and cotton industries in America. The books have good pictures and maps.
8. Carpenter, Frank G.: *Asia*. American Book Company, New York, 1897.
9. Carpenter, Frank G.: *Europe*. American Book Company, New York, 1902.
10. Carpenter, Frank G.: *How the World is Clothed*. American Book Company, New York, 1908.
11. Carpenter, Frank G.: *How the World is Fed*. American Book Company, New York, 1907.
12. Carpenter, Frank G.: *How the World is Housed*. American Book Company, New York, 1911.
13. Carpenter, Frank G.: *North America*. American Book Company, New York, 1898.

These six books are supplementary readers in geography. They tell in a simple way about the world's resources and how we provide for our three chief needs: food, shelter and clothing. They contain many excellent pictures.

14. Casson, Herbert N.: *Cyrus Hall McCormick, His Life and Work*. A. C. McClurg and Company, Chicago, 1909. An interesting biography of a man whose inventions advanced American industry tremendously. Biographies of other industrial leaders should by all means be used in discussing *Industries and Resources in a Machine World*.
15. Casson, Herbert N.: *The History of the Telephone*. A. C. McClurg and Company, Chicago, 1913. A clear and interesting description of the development of this invention. An invaluable supplementary reader.
16. Casson, Herbert N.: *The Romance of the Reaper*. Doubleday, Page and Company, New York, 1908. An accurate, yet entertaining story of the development of the farm machinery business. Valuable for supplementary reading, full of concrete stories of the reaper.

- 17 Crump, Irving: *The Boy's Book of Railroads*. Dodd, Mead and Company, New York, 1921. Several interesting stories about the various men who maintain and operate our railroads—the engineers, conductors, station agents, signalmen and others.
18. Earle, Alice M.: *Home Life in Colonial Days*. The MacMillan Company, New York, 1919. Elaborately illustrated and full of rich detail, it is by far the best source from which to get a picture of home life and industry in Colonial times.
19. Finch, V. C. and Baker, O. E. *Geography of the World's Agriculture*. United States Department of Agriculture. Government Printing Office, Washington, D. C. 1917. Every teacher will find this atlas of great assistance as a reference book for the students and as a source for supplementary maps.
20. Hendrick, Burton J.: *The Age of Big Business*. Yale University Press, New Haven, Conn., 1919. Gives the history of certain important industries—oil, steel, the telephone, public utilities, farm machinery and the automobile. Good for concrete stories of these industries.
21. Judd, Charles H. and Marshall, Leon C.: *Lessons in Community and National Life*. Three Series—Series A: for the Senior High School, Series B: for the Junior High School, Series C: for the Intermediate grades. Bureau of Education, Washington, D. C., 1918. Each series is suitable for seventh grade pupils. These lessons are most important supplementary material for use in classes in the social sciences. They contain many concrete examples of industrial and community life.
22. Keller, A. G. and Bishop, A. L.: *Commercial and Industrial Geography*. Ginn and Company, New York, 1912. A presentation of simple practical facts about America and industry. A good supplementary reader.
23. Marshall, Leon C. and Lyon, Leverett S.: *Our Economic Organization*. The MacMillan Company, New York, 1921. An excellent textbook on industry for the use of senior high school pupils. Contains excellent descriptions of machine industry and the control of business today.
24. Moody, John: *The Masters of Capital*. Yale University Press, New Haven, Conn., 1919. This book gives an excellent account of the activities of several of our great business men in managing important industries of America.
25. Moody, John: *The Railroad Builders*. Yale University Press, New Haven, Conn., 1919. An excellent historical account of how our great trunk lines and transcontinental systems were developed by pioneer railroad builders like Vanderbilt, Thomson, Hill, Huntington and Harriman. Gives important facts about the history of railroad consolidation.
26. Smith, J. Russell: *Commerce and Industry*. Henry Holt and Company, New York, 1916. A valuable reference book because of its descriptions of various industries. Full of pictures, maps and charts.
27. Smith, J. Russell: *The Story of Iron and Steel*. D. Appleton and Company, New York, 1920. A very valuable supplementary reader. Chiefly a descriptive account of modern mining, shipping and smelting of iron ore. Fourteen well selected illustrations are included.
28. Southworth, Gertrude and Kramer, Stephen: *Great Cities of the United States*. Iroquois Publishing Company, Inc., Syracuse, New York, 1916. A descriptive and historical discussion of thirteen of the largest cities in the United States.
29. *The Statesman's Year-Book*, 1922. The MacMillan Company, New York, 1922. A one-volume reference book which covers the essential statistics and facts on industry, population, commerce, etc., of every country in the world. This book and *The World Almanac* should be available for reference in every school library.
30. Taylor, Graham R.: *Satellite Cities*. D. Appleton and Company, New York, 1915. A clear cut description of many of the problems of the American city. The book contains many excellent illustrations of ways to improving our urban centers.

31. Thompson, Charles M.: *History of the United States*. Benjamin H. Sanborn and Company, Chicago, 1920. A history dealing chiefly with industrial and social matters. A good book to use for supplementary work in studying the history of industry.
32. Thompson, Holland: *The Age of Invention*. Yale University Press, New Haven, Conn., 1921. An excellent account of several of the most important inventors. It tells how their work has revolutionized our industries today.
33. Washington, William D.: *Progress and Prosperity*. The National Educational Publishing Company, New York, 1911. The story of building a new country and unifying it through improved transportation. This book invaluable for its many pictures and graphic ways of describing our transportation system and its growth.
34. *The World Almanac and Encyclopedia for 1922*. Press Publishing Company, New York World, New York, 1922. A small one-volume encyclopedia. It contains statistical and factual information about political, economic and social matters. An excellent and cheap reference book for the class.

II. SUGGESTED BOOKS FOR TEACHERS.

1. Baring, Maurice: *Russian Essays and Stories*. Methuen and Company, 36 Essex Street W. C., London. 1908. Stories which give a clear picture of Russian life, thoughts, and travel before the Revolution of 1917.
2. Bowman, Isaiah: *The New World*. World Book Company, Yonkers, New York, 1921. A most searching and authoritative discussion of the problems of present-day political geography. Contemporary international relations explained with reference to their geographical and historical setting. Buy this book if you can buy only one contemporary book.
3. Cotter, Arundel: *United States Steel*. Doubleday, Page and Company, Garden City, New York, 1921. A concrete story of the history of steel industry. Valuable for its descriptions and facts.
4. Betham—Edwards, Matilda B.: *Home Life in France*. A. C. McClurg and Company, Chicago, 1905. A good descriptive account, full of interesting episodes and illustrations.
5. Fielde, Adele M.; *A Corner of Cathay*. The MacMillan Company, New York, 1894. An interesting description of the life of the Chinese.
6. Gibbons, Herbert A.: *The New Map of Asia*. (1900-1919). The Century Company, New York, 1919. A very important book. "Presents the principal facts and problems of Asiatic history since 1900 in so far as they are the result of or have been largely influenced by the maintenance and extension of European intervention."
7. Haney, Lewis H.: *Business Organization and Combination*. The MacMillan Company, New York, 1921. A systematic treatment of the development of "big business" and the "trusts." A valuable reference book.
8. Headland, Isaac T.: *Home Life in China*. The MacMillan Company, New York, 1914. Many interesting episodes and pictures about the customs of the Chinese.
9. Johnson, Emory R. and Van Metre, T. W.: *Principles of Railroad Transportation*. D. Appleton and Company, New York, 1920. A most important and comprehensive book describing all phases of railroad transportation.
10. Jones, Eliot: *The Trust Problem in the United States*. The MacMillan Company, New York, 1921. The most recent and authoritative treatment of some of the present day characteristics of industry. Concrete examples of the history and pictures of several of our "key" industries. A helpful reference book.
11. King, Willford I.: *The Wealth and Income of the People of the United States*. The MacMillan Company, New York, 1919. This book describes the wealth of America and its distribution among families, industries and corporations. Use it in connection with No. 16.: *The Income in the United States*.

12. Latourette, Kenneth S.: *The Development of China*. Houghton Mifflin Company, Boston, 1917. One of the best books for the teacher, on the historical development of China, full bibliography given at the end of the book.
13. Latourette, Kenneth S.: *The Development of Japan*. The MacMillan Company, New York, 1918. One of the best books on the historical development of Japan. A bibliography included will be suggestive for more extensive reading.
14. Marshall, Leon C.: *Readings in Industrial Society*. The University of Chicago Press, Chicago, 1918. This book contains many excellent quotations and examples of such important characteristics of industry, as concentration, integration, specialization and interdependence. An excellent source book about economic and industrial matters.
15. Morse, Edward G.: *Glimpses of China and Chinese Homes*. Little, Brown and Company, Boston, 1902. An interesting description of Chinese home life with many excellent illustrations.
16. The National Bureau of Economic Research, Inc.: *The Income in the United States*. Vol. I. (Summary.) Harcourt, Brace and Company, New York, 1921. The most recent and authoritative statement of what the income in the United States is.
17. Smith, J. Russell: *The World's Food Resources*. Henry Holt and Company New York, 1919. A valuable reference book for the teacher about our food resources. It contains many excellent maps, charts and pictures.
18. Tryon, Rolla M.: *Household Manufactures in the United States, 1640-1860*. The University of Chicago Press, Chicago, 1917. A valuable reference book for the study of "From Home to Factory."
19. Weber, Adna F.: *The Growth of Cities in the Nineteenth Century*. Published for Columbia University by The MacMillan Company, New York, 1899. The best single source from which to get data and statistics (to 1899) on the growth of cities in all parts of the world.
20. Wells, H. G.: *Russia in the Shadows*. George H. Doran Company, New York, 1921. Impressions of Russia by one of the world's keenest students, following his visit to that country in 1920.

III. ADDITIONAL SUGGESTIONS TO TEACHERS ABOUT SUPPLEMENTARY MATERIAL

- A. 1. School geographies should constantly be used in the study and discussion of the foregoing lessons in *Resources and Industries in a Modern World*. Three of the most recent school geographies are (1) Atwood, W. W.: *New Geography* Book two, Ginn and Company, New York, 1920. (2) McMurry, F. M. and Parkins, A. E.: *Advanced Geography*. The MacMillan Company, New York, 1921. (3) Smith, J. Russell: *Human Geography*. Book one. The John C. Winston Company, Philadelphia, 1921. Any other geography available may be used.
- B. An important magazine that gives the most recent and authoritative digest of the developments in industry and business is *The Industrial Digest*; Periodical Digest Corporation, 25 W. Forty-fifth St., New York. Subscription rate, \$5.00 per year. This is "a fortnightly digest of informative articles in one thousand leading industrial magazines covering thirty industries." Each issue contains many pictures, charts and maps. Your school library should subscribe to this magazine.
- C. We suggest that you make use of other current periodicals such as *The Literary Digest*, *The Outlook*, *The Review of Reviews*, *The Current Opinion*, *The World's Work*, *The National Geographic* and *The Scientific American*.
- D. Some of the most valuable and interesting supplementary material may be obtained by writing to various corporations. Each of the companies below will mail free helpful pamphlets which describe their work. The pictures and charts in some of them are excellent. It would be well to state in your letter requesting material that you desire it for school use.

THESE INDUSTRIES PUBLISH HELPFUL DESCRIPTIVE MATERIAL

1. The Automobile Industry: Write to the Ford Motor Company, Detroit, Michigan.
2. The Banking Industry: Write to (1) The National City Bank of New York, 55 Wall St., New York, N. Y. (2) Guaranty Trust Company of New York, 140 Broadway, New York, N. Y.
3. Chain stores: Write to The F. W. Woolworth Company, Woolworth Building, New York, N. Y.
4. Conditions in Cities: Address the Secretary of the Chamber of Commerce in each of the larger cities of the United States.
5. Coal: Write to the Consolidation Coal Company, Munson Building, New York, N. Y.
6. Electricity: Write to the General Electric Company, Schenectady, N. Y.
7. Farm Machinery: Write to the International Harvester Company, Chicago, Illinois.
8. Grain: Write to the Washburn-Crosby Flour Mills, Minneapolis, Minn., or the Pillsbury Company, Minneapolis, Minn.
9. Mail order houses: Write to Sears, Roebuck and Company, Chicago, Illinois, or Montgomery Ward, Chicago, Ill.
10. Meat packing: Write to (1) Armour and Company, Union Stock Yards, Chicago, Illinois. (2) Swift and Company, Union Stock Yards, Chicago, Illinois.
11. Steel: Write to the United States Steel Corporation, 71 Broadway, New York, N. Y.
12. Shoe Machinery: Write to the United Shoe Machinery Company, Beverly, Massachusetts.
13. Textiles: Write to (1) The American Woolen Company, Boston, Mass., (2) to the Parkhill Manufacturing Company, Fitchburg, Mass.
14. Transportation: Write to the General Passenger Agent of the leading railroad systems. These railroads issue pamphlets typical of this supplementary material (1) The Pennsylvania Railroad Company, New York City, (2) The Southern Pacific Railroad, San Francisco, California, (3) The Chicago Milwaukee and St. Paul Railroad, Minneapolis, Minnesota. Steamship lines like the Cunard Line, 25 Broadway, New York, N. Y. publish similar descriptive pamphlets.
15. Telephone: Write to the American Telephone and Telegraphy Company, 195 Broadway, New York, N. Y.
16. Watch Industry: Write to the (1) Waltham Watch Company, Waltham, Massachusetts, or (2) Elgin Watch Company, Elgin, Illinois.



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A SUGGESTED SCHEDULE OF LESSONS

TO the Teacher: VERY IMPORTANT. *The study of this pamphlet should not take more than 75 to 80 school exercises if the remaining topics are to be distributed equitably over the remainder of the year. The following schedule is the one that we shall try to follow. Feel free to adapt it as you like. You may wish to save time by omitting some sections. If more readings are needed for some pupils use the ninth grade pamphlet on this topic.*

On any one of these assignments have the pupils read straight through first, not answering the questions. Following that have them go back and work out the answers to the questions.

If any questions appear to you to be distinctly too difficult and time-consuming after a reasonable attempt with them pass on to the next work. Please make your criticism of such things clear in your "criticism pamphlet" which you will return to us.

You Should Begin this Pamphlet Not Later Than November 1, and Finish the Latter Part of February

Lesson No.

1. Turn through the major topics of the entire pamphlet in order to see what it describes. Read and comment on the list of questions at the very end of the pamphlet: *Important Questions You Should Be Able to Talk About.*

PART I.

2. Read and discuss topic I: *Complicated Life Today*, pages 1-7.
- 3, 4. Read and discuss topic II: *Real Stories of How People's Work Has Gone From the Home to the Factory*, pages 8-18. Spend two class periods on this chapter.
- 5, 6, 7,
8, 9, 10,
11, 12, 13. Nine lessons are suggested for topic III: *The Startling Growth of Cities, 1800-1922*. For lesson 5 read and discuss pages 19-24 and work the exercise on page 24. Do the review map exercise on page 24 and answer questions on page 24 for lesson 6. Read pages 25-30 on *Why Cities Grow* and study figs. 10-17 for lesson 7. About six lessons will be necessary in order to cover the exercises, pages 30-38 on *Why Cities Have Grown Where They Did*. (Spend lesson 8 on the map exercise, pages 30-31, lesson 9 discussing pages 31-34 and lesson 10 on pages 34-37. Give two class periods, lessons 11 and 12, to the exercise on page 38. Lesson 13 should be devoted to preparing the summary of topic III, pages 19-38.)
- 14, 15, 16,
17, 18, 19,
20, 21, 22,
23, 24. Spend eleven lessons on topic IV: *Transportation—Crucial to City and Country*. Read and discuss the first section, pages 39 and 40, including pages 66-71 of Part II referred to for lesson 14. Spend lessons 15 and 16 on pages 40-42, on *Where Does the Food on Your Dinner Table Come From?* Read and discuss pages 42-48: *A Picture Story of a Century of Transportation* for lesson 17. Spend two lessons—18 and 19—reading and working the exercises on pages 49-51. We suggest that you devote one lesson—20—to the special reports listed on page 51. Two lessons will be necessary for the exercises on section 6: *Does America Use Her Waterways?*, pages 51-57. Spend lessons 23 and 24 working the review questions, pages 57 and 58, and preparing the summary of topic IV.: *Transportation—Crucial to City and Country*.